HANDBOUND
AT THE

UNIVERSITY OF

d
1199

HE PRACTITIONER:

A JOURNAL

OF

THERAPEUTICS AND PUBLIC HEALTH.

EDITED BY

T. LAUDER BRUNTON, M.D., F.R.S.,

Fellow of the Royal College of Physicians;
Assistant Physician to St. Bartholomew's Hospital;
and
Lecturer on Materia Medica and Therapeutics in St. Bartholomew's Hospital School.

VOL. XVIII.

JANUARY TO JUNE.

42124 7
3.4.44

London:
MACMILLAN AND CO.
1877.

LONDON:
R. CLAY, SONS, AND TAYLOR, PRINTERS,
BREAD STREET HILL,
QUEEN VICTORIA STREET.

R
31
P7
no. 18

CONTENTS OF VOL. XVIII.

ORIGINAL COMMUNICATIONS :—

PAGE

Beriberi. By Sir J. Fayrer, K.C.S.I., M.D. 1

Opium as a Laxative. By Saltern G. Littlejohn, M.B. . . . 10

On the Topical Action of Remedies. By J. R. Gasquet, M.B. . . 15

Thrombosis Penis. By R. Clement Lucas, B.S. Lond., F.R.C.S. . 22

Chloroform. By John Chiene, F.R.C.S.E., F.R.S.E. . . . 25

Note on the Quantitative Estimation of Urea. By Dr. W. J. Russell and Dr. West 33

Some Remarks on the Eczema Marginatum of Hebra. By George Thin, M.D. 34

Warburg's Tincture. By W. H. Broadbent, M.D. 81

Sciatica. By Thomas Buzzard, M.D. 94

The Return on Sciatica 107

On the Curative Effects of Mild and Continued Counter-irritation of the Back in Cases of General Nervous Debility and in Certain Cases of Spinal Irritation. By Arthur Gamgee, M.D., F.R.S. . 113

The Uses of Pepsin in Medicine, and its Preparation. By Oscar Liebreich, M.D. 161

A Case of Acute Mania Treated with large doses of Hyoscyamia, Daturine, Atropia, and Ethyl-Atropia. By Sydney Ringer, M.D., and J. S. Bury 166

Tape-worm (*Tœnia Media Cannellata*) Expelled by Turpentine after the Failing of several other Remedies. By Arthur Leared, M.D. 170

Two Cases of Violent Chorea, Illustrating the Administration of Chloral Hydrate in Large Doses. By Robert Bridges, M.D. Oxon. 172

On a New Treatment in *Post-Partum* Hæmorrhage. By Handsel Griffiths, Ph.D., L.R.C.P.E. 176

On the Use of Weak Solutions of Saline Drugs. By W. T. Wade, F.R.C.P. 241

On Diphtheritic Paralysis. By Thomas Stretch Dowse, M.D., F.R.C.P.E. 177, 245

Quinine as an Ecbolic. By H. P. Roberts 256

On the Desirability of Formally naming any existing Diathesis in Cases of Acute Disease. By T. Churton, M.B. 257

On Phimosis. By J. C. Ogilvie Will, M.D. 269

Dictionary of Medical Literature. By the Editor 275

On the Use of Warburg's Tincture. By James Tompsett, M.R.C.S., Q.S.A. 321

On the Treatment of Croup. By John J. Higgins, A.M., M.D., New York, U.S.A. 323

PAGE

On the Disadvantages of Oil of Turpentine as a Vermicide. By F. de Havilland Hall, M.D. 337

On a New Preparation of Iodine. By J. Crouch Christopher, F.R.C.S. 339

Sulphur and Sulphurous Acid. By Walter Fergus, M.D. 341

The Aspirator in Hepatic Abscess. By Gerald Bomford, M.D. . . 354

On the So-Called Antagonism of Atropia and Morphia. By Professor Binz, of Bonn 356

On Chloral. By Oscar Liebreich, M.D. 401

The Action of Salicine. By A. D. L. Napier, M.B., &c. 410

A Few Words on the Causes of Gravel. By Dr. Debout D'Estrées . 412

Nerve-Stretching in Sciatica. By John Chiene, F.R.S. 417

A Case of Dropsy. By J. Milner Fothergill, M.D. 421

Observations on Salicine, Salicylate of Soda, and Salicylic Acid. By John A. Erskine Stuart, L.R.C.S. Edin., Musselburgh, N.B. . 425

Arsenic in Albuminuria. By T. Lauder Brunton, M.D. 427

REVIEWS OF BOOKS :—

The Practitioner's Handbook of Treatment; or, the Principles of Therapeutics. By J. Milner Fothergill, M.D. 42

The Physiology of Mind. By Henry Maudsley, M.D. 123

The Functions of the Brain. By David Ferrier, M.D., F.R.S. . 123

Compendium of Children's Diseases. A Handbook for Practitioners and Students. By Dr. John Steiner, Professor of Diseases of Children in the University of Prague, &c., &c. Translated from the Second German Edition by Lawson Tait, Esq., F.R.C.S. . 183

How to use the Ophthalmoscope. By Edgar A. Browne, Surgeon to the Liverpool Eye and Ear Infirmary 185

A Treatise on the Diseases of Infancy and Childhood. By J. Lewis Smith, M.D., Physician to the New York Infants' Hospital, &c., &c. 279

Clinical Studies of Disease in Children, Diseases of the Lungs, Acute Tuberculosis. By Eustace Smith M.D., F.R.C.P. Lond., &c., &c. 279

Medicinal Plants; being Descriptions, with Original Figures of the Principal Plants Employed in Medicine, and an Account of their Properties and Uses. By Robert Bentley, F.L.S., Professor of Botany in King's College, and of Botany and Materia Medica to the Pharmaceutical Society, &c., and Henry Trenien, M.B., F.L.S., Department of Botany, British Museum. Parts I.—XII. 281

A Manual of Ophthalmic Surgery. By B. Thompson Lowne, Ophthalmic Surgeon to the Great Northern Hospital 282

Cyclopædia of Practical Medicine. By Dr. H. von Ziemssen. Vol. VI. The Diseases of the Circulatory System 359

Diseases of the Peripheral Cerebro-Spinal Nerves. By Wilhelm Hermick Erb, Vol. XI. of Ziemssen's Cyclopædia of Practical Medicine, translated by Henry Power 360

A Text-Book of Electricity in Medicine and Surgery. By George Vivian Poore, M.D., M.R.C.P. 362

Clinical Lectures on Diseases of the Heart and Aorta. By George W. Balfour, M.D., F.R.C.P., Physician to, and Lecturer on Clinical Medicine in, the Royal Infirmary, Edinburgh 363

PAGE
Sciatica, Lumbago, and Brachialgia, and their Relief and Cure by the Hypodermic Injection of Morphia. By Henry Lawson, M.D., Assistant-Physician to St. Mary's Hospital 364
Kirke's Handbook of Physiology. Edited by W. Morrant Baker, F.R.C.S., Lecturer on Physiology, &c., to St. Bartholomew's Hospital. . 436
Nouveaux Eléments de Physiologie Humaine, comprenant les Principes de la Physiologie Comparée et de la Physiologie Générale. Par H. Beauvis, Professeur de Physiologie à la Faculté de Médecine de Nancy 436
A Course of Lectures on Physiology: as delivered by Professor Kuss, at the Medical School of the University of Strasbourg. Edited by Mathias Duval, M.D. Translated from the Second and Revised Edition by Robert Amory, M.D. 436
A Text-Book of Physiology. By M. Foster, M.A., M.D., F.R.S., Praelector of Physiology and Fellow of Trinity College, Cambridge 436
A Course of Elementary Practical Physiology. By M. Foster, M.D., F.R.S., Assisted by J. N. Langley, B.A., St. John's College, Cambridge 436
Outlines of Practical Histology. By W. Rutherford, M.D., F.R.S., S.L. and E., Professor of the Institutes of Medicine in the University of Edinburgh 436
A Course of Practical Histology. By Edward Albert Schäfer, Assistant Professor of Physiology in University College, London. 436
Charité Annalen, I. Jahrgang (1874) 440
A Course of Operative Surgery with Plates drawn from Nature. By Christopher Heath, F.R.C.S. 443

CLINIC OF THE SIX MONTHS:—

Alcohol as Food. 47
Treatment of Acute Pneumonia by Turpentine 47
Liquor Ferri Perchloridi Fortior as a Local Application in Erysipelas . 48
Remedies for Chronic Diarrhœa 48
Bicarbonate of Potash as a Nerve-Sedative 49
Croton Chloral in Neuralgia 49
Arteries of the Retina in Bright's Disease 50
Nature and Treatment of Pernicious Anæmia 128
Treatment of Ringworm by Leaves of Cassia Lata 129
Herpes Frontalis Treated Locally by Anodyne Amyl Colloid . . 130
Opium in the Treatment of Rigid Os Uteri. 130
Quinine in the Treatment of Fissures of the Nipple 131
Physiological Action of Mancona Bark 186
The Hypodermic Treatment of Syphilis 187
The Treatment of Psoriasis 187
Ergot as a Preventive of After-pains 187
The Significance of an Unruptured Hymen in Pregnant Women. . 188
The Local Application of Carbolic Acid and Creasote to the Bronchial Mucous Membrane 188
The Uses of Viburnum Prunifolium in the Treatment of the Diseases of Women 190

PAGE
Abdominal Pregnancy Treated by Gastrotomy 190
Atropine Enemata in Cystitis 190
The Use of the Galvanic Battery in Medicine 191
Cure of Aneurism by Complete Temporary Pressure 192
Treatment of Diphtheritic Paralysis 193
Treatment of Hydrophobia 193
The Relief of Pain by the Outward Application of Hydrate of Chloral 194
The Use of Volition and Manipulations in the Treatment of Paralytic Affection 284
Treatment of Syphilitic Warts 284
Treatment of Nocturnal Cramp 285
Acute Rheumatism Treated with Salicylic Acid 285
Erythroxylon Cuca in the Treatment of Febrile Diseases . . . 286
Treatment of Typhoid Fever 286
Eucalyptus Globulus as a Cure for Ague 366
Oil of Turpentine in Sciatica 367
Goa Powder as a Remedy in Skin Disease 367
Strapping the Breast to Diminish Suppuration after Abscess . . 368
Treatment of Catarrhal Jaundice 368
Progressive Pernicious Anæmia Successfully Treated by Immediate Transfusion 369
Note on the Connection between Eczema and Diabetes Mellitus . . 370
Pain in the Chest of Obscure Origin 370
Treatment of Fistula in Cheek following Necrosis of Lower Jaw . . 370
Cutaneous Itching 371
A New Saw 445
The Relation of Alcoholism to Uterine Disease . . . . . , 445
Salicylate of Atropia and its Application to Pharmacy . . . 446
Treatment of Entropion 446
Treatment of Scrofulous Lymphatic Glands by a Painless Electrolytic Caustic 447
Hydrobromic Acid 448
Treatment of Auditory Nerve-Vertigo 448
Periodic Neuralgia not dependent on Structural Lesion . . . 449

EXTRACTS FROM BRITISH AND FOREIGN JOURNALS:—

Forcible Extension of Nerves in Traumatic Tetanus 51
Traumatic Tetanus Treated by Nerve-Stretching, Calabar Bean, and Chloral 52
Therapeutic Action of Salicylate of Soda 53
Boucheron on the Treatment of Sympathetic Ophthalmia . . . 53
The Action of Salicylate of Soda in Intermittent Fever . . . 54
The Poisonous Action of Pasteur's "Nutritive Fluid" when Cloudy from the Development of Bacteria 54
Local Action of Sulphate of Atropine 55
Alterations in the Peripheric Cutaneous Nerves in Pemphigus . . 55
The Treatment of Coxalgia 56
The Treatment of Inversion of the Uterus by the Elastic Ligature . 56
Phosphide of Zinc 56

PAGE
On the Action of Chloral Hydrate and Croton-Chloral Hydrate . . 57
Treatment of Chorea 132
Antagonism between Morphia and Atropia 132
Easy Method of Cleansing the Middle Ear of Infants 133
A New Method of Treating External Aneurism 134
The Pathology and Treatment of Chorea 195
The Treatment of Cysts with Mucous Contents by Injections of Chloride of Zinc 195
Treatment of Granular Lids by Acetate of Lead 196
Physical Exercise for the Sick 196
The Physiological Action of Sulphate of Guanidine 197
Treatment of Migraine 197
On a Ready Method of Administering Fluids when the Jaws are Firmly Closed 198
Hæmoptysis, its Relation to Barometric Pressure 198
The Amount of Urea Excreted, an Aid in the Diagnosis and Prognosis of Diseases of the Liver 199
On Some New Tests for Bile Pigment 200
Cauterisation of the Pharyngeal Mucous Membrane in Amnesia . . 200
Aspiration of Strangulated Hernia 201
Antipyretic Action of Cresotinic Acid 201
Necessity of Caution in the Use of the Aspirator 287
External Application of Mercury 288
Treatment of Carbuncle 289
Selection of Anæsthetics for Dental Surgery 290
Carbolised Jute Dressing 290
Action of Salicylic Acid 291
Rabies Treated by Intravenous Injections of Chloral 291
Rabies Treated by Oxygen 291
Cause of Hooping-Cough 292
Iodine Injections in Ascites 292
Action of Faradaic Currents in Cutaneous Anæsthesia . . . 293
Aqua Puncture as a Remedy for Neuralgia 293
A New Method of Treating External Aneurism 294
Gangrene of the Lung Treated with Salicylic Acid 294
The Relations of Ciliary Blepharitis (or Ophthalmia Tarsi) to Ametropia 295
Therapeutic Value of Zinc Phosphide 295
Mode of Action of Potassium Iodide 296
Toxic Action of Glycerine 296
Physiological Action of Sanguinarina 297
Diagnosis of Aneurisms of the Aorta by the Laryngoscope . . . 297
Antihydropin 298
Treatment of Diphtheritis 298
Intra-buccal Elastic Ligature for the removal of Lingual Tumours . 298
Treatment of Otorrhœa 299
Means of Arresting Epileptic Attacks 300
Nitrate of Silver in Amaurosis 301
Injections of Carbolic Acid for Neuralgia 301
Salicylic Acid in Cholera 372

PAGE
The Treatment of Diphtheria . . . 372
Treatment of Neuralgia . . . 373
Confectio Damocratis and Warburg's Tincture . . . 374
Iodised Phenol—a New Uterine Escharotic and Alterative . . . 375
The Local Treatment of Puerperal Fever . . . 376
The Physiological Action of Salicylate of Soda . . . 378
Elastic Compression by Sponges . . . 378
Sunstroke . . . 379
Acetic Acid and Acetates in the Treatment of Cancer in the Breast . . . 379
Remedy for Dandriff . . . 379
Action of Water on Healthy and Diseased Skin . . . 380
Researches on the Secretion of Sweat . . . 380
The Actual Cautery in Spasms, Paralysis, and Epilepsy . . . 450
Obesity and Amenorrhœa of Young Women Cured by Milk Diet . . . 451
Psoriasis of the Tongue . . . 452
The Digestion and Dilution of Cow's Milk in the Artificial Feeding of Children . . . 452
Cure of Tuberculosis of the Lungs by Inducing Calcification . . . 454
Remedy for Headache . . . 455
Physiological and Therapeutical Properties of Glycerine . . . 455
A New Remedy called Digestine . . . 455
Deep Injections of Chloroform in the Treatment of Inveterate Sciatica 456
Ænothera Biennis (Evening Primrose) as a Sedative . . . 457
Bromidrosis Pedum . . . 457
Case of Tetanus Successfully Treated by Calabar Bean . . . 458
Salicylic Acid in Iritis . . . 459

DEPARTMENT OF PUBLIC HEALTH :—

On the Registration of Disease . . . 61
On an Outbreak of Diphtheria : An Official Report . . . 74
Nine Propositions Bearing on the Ætiology and Prophylaxis of Cholera Deduced from the Official Reports of the Cholera Epidemic in East India and North America. By Prof. von Pettenkofer . . . 135, 204
The Art of Making Hospitals Unhealthy . . . 304
Disinfection.—A Practical Illustration ; with the Experiences of a Microzyme Relating thereto . . . 312
On Diseases and Hygiene of Workmen in the Manufacture of Artificial Fuel from Pit-Coal Agglomerated with Dry Pitch. By Dr. Manouvriez . . . 316, 395, 471
Sewage Disposal . . . 384
Citizenship in Sanitary Work : A Home Example . . . 462
Hygeia Militant . . . 466

NOTES AND QUERIES . . . 59, 202, 302, 382, 460

BIBLIOGRAPHY . . . 60, 203, 303, 383, 461

INDEX . . . 481

THE PRACTITIONER.

JANUARY, 1877.

Original Communications.

BERIBERI.

BY SIR J. FAYRER, K.C.S.I., M.D.

Honorary Physician to H.M. the Queen, Physician to H.R.H. the Prince of Wales and H.R.H. the Duke of Edinburgh.

Beriberi (the bad sickness of Ceylon); the sleeping sickness of the west coast (Horton); Progressive pernicious anæmia (Biermer); Beriberia, Barbier (Bontius); Timmery Waivoo (Teloogoo); Wawayah (Telingee); Soojh Báee (Hindee); Soondke Báee (Deccan); Soon-Bhayree (Bengal, North-West Provinces.)

Definition.—Anæmia, resulting in anasarca, and general dropsy of all the cavities and tissues; and degeneration of muscular tissue. Debility, œdematous swelling of limbs, trunk, and face, numbness, pain, and paralysis of extremities, especially the lower. Precordial anxiety, pain, and dyspnœa. Scanty and high-coloured urine. In some cases drowsiness or sleep. Occurs in a chronic and acute form, in the latter it often proves rapidly fatal from exhaustion, syncope, or cardiac or pulmonary coagula.

Geographical Distribution.—It prevails endemically in Ceylon; in India, on the Malabar Coast, and in the Northern Circars, between 13° and 20° N. latitude, extending inland from forty to sixty miles. It is known in other parts of India, as in the Deccan, Central India, Bengal, and probably, occasionally, all over the peninsula. In Burmah and the Malayan peninsula. In the crews of ships trading to ports in the Persian Gulf, Red Sea, coast of Africa, Bay of Bengal, Singapore, Siam, and the islands of the Indian Archipelago (Carter, Morehead, and others). In the Australian seas (Morehead). On the west coast and other parts of Africa, where it is known as the sleeping sickness (Horton and others). In Europe, as pernicious anæmia (Biermer). And probably wherever the conditions of food, water, soil, climate, and mode of life that originate it in the above-named sites exist.

Etymology of beriberi is obscure. The name is unknown to natives of India as that of a disease. Herklotts says it is unaccountable how it has crept into such general use. He suggests the Hindi word, Bhéree—a sheep—from the fancied resemblance of the gait of persons affected to that of the sheep.

Soond-bhéree, from the words numbness and sheep; the latter reference as above.

Soond-ke-baiee, from numbness and rheumatism.

Bhér-bheri, a Hindi word, signifying a sore, swelling.

Dr. Mason Good says that Bontius introduced the word Beriberia, and tells us it is of oriental origin—thus: Birabir—tillage, and its produce, sheep (hence *brébis*, French); from the resemblance of the patient's movements to those of an over-driven sheep.

Carter suggests Bhari, sailor, from Bahr, the sea; and Bhayr, shortness of breath. As it is seen among African and Arab sailors, this is probable.

Some writers think it is derived from a Cingalese word meaning weakness; the reiteration implying intense weakness; and that it was first applied to a variety of conditions, the result of scorbutic, malarious, rheumatic, and anæmic cachexiæ, on the Malabar Coast.

Dr. Paul, of Madras, believes it is from a Tamul word having reference to the gait of those affected.

ETIOLOGY.—According to Malcolmson and others the disease is very prevalent among the natives of the Northern Circars, especially in the jails of Masulipatam, Raja Mundry, Vizagapatam, Chicacole, Cuddapah, Bellary.

The death-rate from it in these jails reached to 36·5 per cent.; among Sepoys, 13·9 per cent; among Europeans, 26·2 per cent.; thus indicating that the unfavourable conditions of prison life intensified the mortality. Mohammedans suffer more than Hindus. Mortality is higher in Europeans than in the ordinary native population.

In the same locality it prevails most towards the close of the rainy season. There were 291 admissions between July and October; 195 between November and February; and eighty-six between March and June. The above facts show the influence of wet and cold in developing the disease.

All observation tends to show that the disease occurs where causes of debility have for some time operated, and especially in the climates and localities previously mentioned; certain conditions of soil, air, and water, exposure to great alternations of temperature, especially when accompanied by wet, fatigue, depression mental and physical, food deficient in quantity and quality or variety, previous exhausting diseases, malaria, and other undefined atmospheric and telluric influences, all, in fact, that tends to depress the vital energies, impoverish the blood, and starve the nerve centres. The symptoms, it is said, seldom begin to appear within ten months or a year after first exposure to the causes.

Its prevalence in certain districts points to causes intensified in those localities; its occurrence in other intertropical countries, at sea, and, as would seem from Biermer's observations, in more northern climates, all suggest that it is to be classed among general rather than specific diseases.

It has been ascribed by Ranking to disease of the kidney, but there is no evidence to prove that it is due to this cause, or indeed to structural changes of any of the viscera. Morehead refers it rather to a scorbutic origin, and in some respects it resembles scurvy; it may probably, also, be a result of the cachexia that so often results from long residence in a malarious climate, especially when that has been accompanied by exposure, privation, and excessive exhaustion of the vital powers. In such, the most complete anæmia, with debility, may occur, independently of the existence of organic visceral disease, though naturally they will be intensified where that is present.

It seems probable that further investigation will prove that beriberi is due rather to impaired nutrition than to specific disease.

PATHOLOGY.—The phenomena characterising this disease are those of anæmia and general dropsy.

Œdema of the limbs and body generally, with numbness, pain, heaviness, and loss of power, amounting in some cases to paralysis.

Precordial anxiety, dyspnœa, irregularity, palpitation of heart, pain at ensiform cartilage, anæmic murmurs, debility, small quick pulse, which at the outset may be rather hard and full, accompanied by dryness and heat of skin. Appetite at first not impaired, later there is coldness of extremities and torpor of bowels; scanty high-coloured urine, sp. gr. 10·20 to 10·40. Albuminuria not, as a rule, present. According to Horton and others excessive drowsiness and stupor attend some stages of certain cases of the disease,—pale, flabby tongue and blanched mucous membrane, occasionally hæmorrhage from stomach and bowels, with petechial eruption, anxious look, puffy, swollen, and sometimes livid face, a peculiar tottering gait.

Death results rapidly in some of the acute cases, with symptoms of effusion into the thoracic and abdominal cavities, or into the brain; by exhaustion, syncope, or the formation of coagula, either in the systemic or pulmonic circulation. The disease seems to be rarely noticed in the sanitary reports from India of the last ten years.

The Army and Medical Blue Book of 1871 mentions fifteen cases having occurred among native troops in Ceylon, and seventy cases in the Ceylon Rifles in Labuan (Borneo). No European deaths, however, are recorded in the above period.

The inference is that the disease, when it has occurred, has been referred to other headings, such as anæmia, dropsy, &c.

The recent discovery by Mr. T. Lewis in India, of the embryo of a nematode worm in the blood of persons suffering from chyluria, lymphorrhœa, and elephantiasis, of which diseases it appears to be to some extent the cause, suggests inquiry whether it may not also be in some way concerned in inducing beriberi. Fonsagrives and Leroy de Mericourt, describe it as general dropsy with a rapid course, no albuminuria, weakness and loss of sensibility in lower limbs. Dropsy commences as anasarca, and extends to the serous cavities.

Heyman says it is a combination of acute rheumatism and intermittent fever. There are irregular febrile paroxysms, great debility, paretic and hyperæsthetic phenomena; sometimes bilious diarrhœa and vomiting; swelling of the ankle, knee, and hand articulations; seldom œdema and ascites; occasionally delirium and continued fever; the only constant alteration seen in post-mortem examinations, being a thin fluid dark state of the blood.

Oudenhoven says it occurs in three forms, the three often being blended.

The marastic, which is chronic, but tends to a fatal termination, complete paralysis ensuing; sensorium remaining active, and functions of internal organs continuing to be performed: the patient at last becomes apathetic and dies comatose.

The hydropic has a speedier course, but gives more hope of recovery; dropsy of areolar tissue and cavities sometimes rapidly fatal from effusion into pleura and pericardium.

Anæsthesia and paralysis less marked.

The polysarcous—sometimes slow, sometimes rapid in its fatality. Heart often notably enlarged. Death often occurs suddenly and unexpectedly. No post-mortem appearances explain the disease. Nothing has been found in the nerve centres to explain the paralysis. Heart generally fatty. Liver, as a rule, enlarged and hyperæmic. Kidneys normal.

Morbid Anatomy.—Serous fluid effused everywhere, in the areolar tissue, in the lungs, brain, heart, and abdominal viscera. The cavities are, like the tissues, soaked with watery effusion. Tissues soft and degenerate. Muscular fibre fatty and feeble, especially the heart, which is often enlarged and dilated.

The kidneys, enlarged, anæmic, and softened. But though hepatic, splenic or renal complications may exist and intensify the severity and hasten the progress of the general symptoms, they are not essential concomitants of the disease, but appear to originate in a spanæmic state of the blood, and to be kept up by its progressive imperfect elaboration. The resulting partial starvation of the cerebro-spinal nerve centres, and the nervous effusion into and amongst them, sufficiently account for the paralysis, which in severe cases characterises this disease.

Symptomatology.—The disease presents itself under a chronic and an acute aspect; rarely, it is said, ever occurring in either form, until after an exposure of some months to the exciting causes. The general symptoms having been described, it remains only to say that it frequently assumes a slighter and modified form indicated by anæmia, numbness, and a certain amount of pain in the limbs, and an anxious expression, disordered bowels, scanty urine, cold skin and low, feeble and irregular pulse, precordial pain or uneasiness, palpitation, nervous depression, an unsteady, almost tottering gait, and a puffy face and neck.

Dr. Paul says: "I have met with a numerous class of cases that are not so serious (as the acute) or so often fatal, where the chief symptom complained of was burning of the feet."

Malcolmson describes this remarkable condition in connection with beriberi, to which, he says, it is allied, though it does not often occur without disease, "and is found to affect the soles and calves of the legs, the back, and occasionally the muscles of the legs.

It occurs in recent and slight examples of beriberi. It was first observed in the troops after the first Burmese war, and it sometimes occurred in men who had not had beriberi; on the whole, Malcolmson thinks it is neither rheumatism nor beriberi, and may accompany or follow other diseases; it is an indication of nervous debility.

In the acute forms of beriberi the symptoms are very severe and often rapid, as they might prove in other cases of acute general dropsy.

The mortality resulting from this form, as previously mentioned, would indicate it to be second only to cholera in fatality.

Rapid general anæmia and dropsy of the cavities, scanty, almost suppressed urine, constipation, weak, irregular pulse, intense precordial pain, hurried, irregular, and painful breathing, occasional vomiting—sometimes of blood. Swelling of limbs, numbness, pain, paralysis, preceded by a feeble, tottering gait; all the symptoms of pleuritic and precordial effusion, failing heart, and death either from syncope, or perhaps almost suddenly from embolism—death in the most acute cases having taken place within a few days. In this acute form it is very fatal, but in the milder and more chronic form recovery is frequent. Acute cases often supervene in those who have suffered from the milder disease, or in those who are exhausted and anæmic from other causes.

Prevention and Treatment.—Attention to proper diet, suitable clothing, protection against vicissitudes of temperature, wet and cold. Bad hygiene and exhaustive habits of life will tend to promote the development of the constitutional condition in which the disease commences.

When it is established these precautions are still necessary, and attention must be paid to the symptoms as they occur. Diuretics and diaphoretics, to relieve the œdema and dropsical effusions. Tonics and stimulants to give vigour to the weakened muscular fibre ; and remedies and diet that may improve the condition of the blood.

In the more aggravated and acute cases the indications are still the same, but may require more energetic application, and those that are calculated to obviate the tendency to exhaustion, fatal syncope, and embolism may be especially indicated.

Acetate of potash, digitalis, and squill, occasionally combined with calomel, are said to favour the removal of the fluid. It is needless to say that the physiological action of mercury is to be avoided. Salines, hot-air baths, and diaphoretics may at various stages be found useful.

The object being to remove the fluid and strengthen muscular fibre, iron and other tonics will prove an important element in the treatment.

No remedies however, will be of much avail unless the patient be placed in favourable hygienic conditions.

Malcolmson speaks highly of two remedies; trēak farook, and oleum nigrum, procured originally at Masulipatam, which are considered to be very effective in the treatment of the disease, especially in relieving the dyspnœa and œdema, which proved very fatal until they were introduced.

The Treak farook is a black electuary, imported, says Waring, from Venice, and is the *Theriaci Andromachi* of old writers, it is rendered into Arabic ترياق Trēak and Tyriak. The affix فاروق farook signifying its difference and superiority to other trēaks. It is, in short, freely translated "the select trēak."

It is used for other diseases besides beriberi, such as rheumatism, numbness and as an aphrodisiac. Mr. Geddes first brought it to notice, and he employed it in combination with rhubard, cinnamon, cloves, and honey. Thus :—

Trēak, ʒ iii.
Rhei, ℥ ii. ss.
Cloves, gr. xx.
Mellis, gr. v.

ʒ iv. ss. of this taken every morning, procure four or five stools daily. Good food, meat, wheaten cakes, milk being given at the same time. A similar mode of treatment is advocated by Malcolmson. The composition of the trēak is apparently generally unknown—it seems to be diuretic, stimulating and probably not aperient unless combined with rhubarb, in doses of four to fifteen grains.

When given alone, Malcolmson says, it had no obvious effect, unless that it slightly constipated the bowels.

The *Oleum nigrum*, which is also highly spoken of by Malcolmson and others, is prepared from the malkungaree seeds (*Celastrus nutans*), combined with benzoin, cloves, mace, nutmegs—it is a stimulant and diaphoretic given thrice daily. It has been found by Indian physicians to be very beneficial in some cases of beriberi.

But there is no good reason for supposing that these remedies have any specific action beyond that of a stimulant, or as diuretics or diaphoretics, and the peculiar properties which they probably share with terebinthinate drugs in stimulating capillary action.

Nux vomica has often been found useful in certain cases, as might be expected, and opium may be needed to allay pain and irritability.

Hepatic and splenic complications indicate the probable need for their appropriate remedies.

Salines and occasional mercurials. Iron in the splenic form. Obviously the indication is to promote removal of the œdema, regulate the functions of the abdominal viscera, increase the action of the skin, and give tone and vigour to the muscular fibre. Appropriate diet, careful hygiene, change of locality, remedies in accordance with the special indications and especially such as will tend to improve the condition of the blood and the blood vascular glands. By such measures can we hope to deal successfully with this profound form of cachexia.

OPIUM AS A LAXATIVE.

BY SALTERN G. LITTELJOHN, M.B.

Medical Officer to the Central District School, Hanwell.

ALTHOUGH there is almost no drug which causes such immediate purgation as morphia when injected directly into the veins of an animal, yet the utility of opium as an astringent in diarrhœa is so great, and its beneficial effect in checking the flux follows so constantly upon its administration, that to speak of it as a laxative seems almost absurd. And yet the following case will, I think, show that under certain circumstances it may exert a laxative action. I will first narrate the case, and afterwards discuss the probable *modus operandi* of the remedy.

E. H., æt. 16 years, was admitted to the infirmary September 9, 1873. She had been to me a few days before, complaining of constipation, and the nurse had said she ought to be then menstruating, but was not—generally irregular. I gave her an aperient (P. Jal. Co. 30 grs.) and Pil. Ferri et Al. to be taken later. No effect.

On admission abdomen distended and very resonant, tender over left ovary on pressure, no pain without, but a feeling of tightness. Bowels have not acted for several days—appetite poor—no thirst—tongue, thick white fur—not been sick, but felt so.

Urine dark—rather scanty (?) normal; skin hot and dry—the temperature was not taken; pulse 86; heart natural; does not sleep well—restless.

Ordered Pul. Jal. Co. 30 grs. and mist. effervescens afterwards,[1] beef-tea and milk *ad lib.*—no solid food.

---

[1] This has a small quantity of mag. sulph. in it.

Sept. 10.—No better—abdomen painful and very tense—over left ovary very painful—sick once, dark stuff, with no particular smell—no motion—sleep bad.

Ordered injection of starch and ether.

Sept. 11.—No better—bowels have not acted—abdomen very tense and tender all over—very much so over left ovary still—can't sleep.

Ordered 1 grain dose of opium twice a day in pill, the first, at noon to-day, the next at night.

Sept. 12.—Very much better—no sleep, but bowels acted to-day, and much wind passed—menstrual flow appeared slightly last night.

Sept. 13.—Wants to get up, and eats moderately—bowels have acted again, very dark hard fæces.

She was dismissed a day or two later, but was readmitted August 1, 1874, with general symptoms as before—constipation and distension—great abdominal tenderness especially over left ovary—been sick—since she was last in hospital menstruated once or twice regularly, then irregularly, and now she ought to be menstruating. Bowels have been more or less confined all along, and she has been taking Pil. Ferri et Al. General symptoms more intense than when last in—the weight of the bed-clothes causes pain over the left ovary, and the region of the liver is very tender also—the tongue is white and moist—vision, &c., normal, but her head is noisy, and she can't sleep from the distension and pain, and from general restlessness.

Ordered milk and beef-tea diet—no solids. Gave her at once Pil. Opii 1 gr. twice a day, with hot fomentations over abdomen.

Aug. 2.—No sleep, but rather drowsy—distension of abdomen great and tenderness extreme—no motion, but says she passed a little wind backwards—no sign of menses.

To go on with pills and have feet put in hot mustard and water at bedtime.

Aug. 3.—Bowels acted in night slightly, watery and dark, with a few scybala—slight appearances of menses (been looking for it as it appeared last time). Feels much better—distension and tenderness much less—drowsy, but says she has had but little sleep.

Aug. 4.—Bowels acted freely and menses have been free—

distension quite gone, and general abdominal tenderness, that over left ovary only remaining slightly.

Aug. 5.—Allowed her chop and two ounces of wine, and leave to get up.

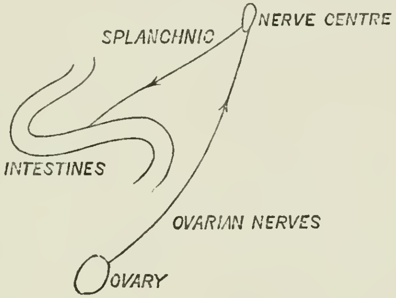
Two days later she was sent out again.

The points to be noticed in the case are the tenderness over the left ovary, the continuance of the constipation, in spite of active purgatives, and its disappearance after the exhibition of opium, and almost coincidently with the appearance of the menstrual flow. These seem to indicate that the constipation was in some way dependent on the menstrual disorder and ovarian congestion. If we wish to understand the nature of this dependence more exactly, it will be necessary to consider what constipation is. It is the non-evacuation of the contents of the bowel from absence of the proper peristaltic movements, which normally force the fæcal masses onwards, and finally expel them altogether. Although increased secretion may be one cause of diarrhœa, and dryness of the bowel may tend to cause constipation, yet dryness alone will not produce it, for we see that in the case just narrated the motions passed after the administration were not liquid, but consisted of dry scybala. To the absence of proper peristaltic movements in the bowels of this patient we must then ascribe the constipation from which she suffered, and the evacuations observed after the administration of opium are, I think, due to their return. I was at first unable to think what the cause of the quietude of the intestines could be, until, on conversing about the case with a friend, he suggested that it might be due to reflex excitement of the splanchnic nerve by the congested and tender ovary. Several years ago Pflüger showed that irritation of the splanchnic nerves arrested the intestinal movements.[1] Some subsequent observers attributed this result to a direct inhibitory action of the splanchnics upon the nervous ganglia contained in the intestine itself, and which keep up its peristaltic movements even after its removal from the body.[2] Others ascribed it to the influence of the splanchnic nerves upon the vessels of the intestine, for these nerves have the power of causing these vessels to contract, so as to stop the supply of blood to the intestine, and to drive that which its vessels usually contain into other parts of the body.[1] But though physiologists differ as to the mode in which the splanchnics arrest the intestinal movements, almost all agree that they possess the power to do so when they are excited directly, as, for example, by the application of an electric current to their trunks. At the time they are thus excited, and simultaneously with the arrest of peristaltic action, the blood pressure rises in the aorta and its branches, from the blood being driven out of the intestinal vessels by their contraction.[2] Now this effect upon the blood-pressure can be produced not only by irritating the splanchnics directly, but also by stimulating some sensory nerve,[3] and thus exciting the splanchnics reflexly. We have already seen that stoppage of the intestinal movements coincides with the rise in blood-pressure, and thus it is almost certain that the peristalsis of the intestines may be stopped reflexly, although I am not aware of any experiment in which this has been directly observed. It seems highly probable, therefore, that the sluggishness of the intestines in the case of E. H. was due to the irritation caused by congestion of the left ovary passing up the sensory nerves of that organ to the nerve centres, whence it was reflected down the splanchnics, and arrested peristaltic action, as shown in the accompanying diagram. As the action of opium is to

---

[1] "Hemmungsnervensystem der Bewegungen der Gedärme," *Monatsber. der Berlin. Akad.*, 12 Juli, 1855.

[2] O. Nasse, *Beiträge zur Physiologie der Darmbewegungen*, 1866. Ludwig and Kupfer, *Zeitsch. f. rat. Medicin*, 3 R. ii. p. 1.



---

[1] Meyer u. von Basch, *Sitzungsber. d. Wein. Akad.* Bd. lxii. 1870, p. 809.

[2] v. Basch. *Sep. Abd.* and *Ludwig's Arbeiten*, 1875, p. 9.

[3] Loven, *Ludwig's Arbeiten*, 1866, p. 5. Asp, *Ludwig's Arbeiten*, 1867, p. 150.

lessen excitability of nerve centres, and diminish reflex action generally, it probably lessened the excitability of the nerve centres through which the ovarian irritation was reflected to the splanchnics, and by thus lessening the inhibitory action of the latter nerves, allowed peristalsis to proceed. The occurrence of the menstrual flow would diminish the congestion of the ovary, and by thus lessening the irritation, would aid the action of the opium. Although this one case is very far from proving anything definitely, yet I have thought it worth recording on account of its suggesting the use of opium, and of local bleeding in cases where tenderness of the ovaries is found coincidently with the constipation which is so common and so troublesome in young females, as well as of indicating a possible cause of this condition of the bowels in them.

ON THE TOPICAL ACTION OF REMEDIES.

BY J. R. GASQUET, M.B.

[*Read before the Brighton and Sussex Med. Chir. Society, October* 5, 1876.]

WHEN I was honoured by your secretary's request that I should furnish some subject for discussion this evening, I resolved to bring before you one instance of that large class of problems in which we have to determine the bearing of modern physiology on the old-established results of the treatment of disease. My reason for doing so is because the divorce between our theory and our practice seems to me one of the greatest dangers which the art of medicine runs in these days. The labours of innumerable workers have so far added to our knowledge of physiology and pathology as almost to remodel those sciences; and even the least inquiring among us must have casually learned enough to unsettle much that he was taught when a student. But in the exigencies of actual practice we have little or no leisure to consider the relation between these discoveries and the practical work of our profession. We leave behind us at the door of the sick-room our theoretical knowledge, and have recourse to the remedies in which we have learned to trust. The old explanations of their action in many cases—nay, in most—no longer hold good; and it saves us time and trouble to look for no new ones, but to content ourselves with saying that physiology and pathology are in such a state of transition that we had better keep them clear of our every-day work. Now I venture to think this pouring new wine into old bottles is one of the gravest dangers which now menaces our art. Abundant experience in the past testifies that there is no surer way to absolute scepticism than for men to continue practices of which they can give no rational account. Such was the state of things in the early part of this century, when all the recent advances in anatomy and physiology had received little notice from practical men; the first serious attack made upon the received method of treating disease produced a revolution in the art of medicine which swept away the results of the experience of centuries, together with much that was useless and even hurtful.

It seems to me that our minds should be prepared, on the contrary, to endeavour always to use the new discoveries in physiology and pathology to explain the practical part of our work. We shall frequently fail in finding any connection between them, and, more often still, our explanations will be unsatisfactory. This is to be expected whenever scientific inferences are so continually changing, and experience so liable to error, as in medicine; but we shall have acquired the right habit of mind for physicians, which lies as far from credulty as from scepticism.

Attempts of this kind have been brought before you at different times in several very interesting papers; and I now venture to suggest another for your discussion this evening. I propose to consider in what manner we can best explain, from the present standpoint of physiology, the local action of medicines, and whether any general theory can be suggested which shall sufficiently account for all their varied effects. I begin by excluding caustics—that is, all those bodies which by their physical or chemical properties destroy the tissue with which they are placed in contact—for the action of these is sufficiently well understood.

I believe that all other remedies which are applied to the mucous or cutaneous surfaces of the body are generally supposed to produce their local effects by simple contact with the tissues to which they are applied. At any rate I should think this is the view which most of us would take, if we came to consider the matter, though I can only find one statement of it in our recent medical literature. Dr. Handfield Jones says—and every word of that distinguished writer is to be received with respect:—"The action of local irritants seems to be on the tissue rather than on the vessels. When the skin, on being scratched with the finger-nail, presents the *tache méningitique;*

it is difficult to think that the lines of redness can be produced by any paresis of vaso-motor nerves. If such occurred in a reflex manner it surely could not be so limited in extent, but would appear as a more or less wide-spread flush." [1]

Now I venture with great diffidence to think that this argument, drawn from the limited effects of locally-applied remedies, will not seem of much value when we consider that (1) many diseases, of undoubtedly centric origin, are equally limited as to their peripheral manifestations (*ex gr.* herpes zoster); and (2) the action of that local irritant which Dr. Handfield Jones has taken as an example—scratching the surface with the finger-nail—is too complex to admit of the explanation he suggests. It has been shown by M. Marey[2] that if we draw a line on our cheek, or any other vascular part of the skin, we shall find, after the mere mechanical emptying of the vessels has passed away, a sense of constriction is experienced, and, if the irritation has only been slight, the same line is seen to reappear, whiter and evidently less full of blood, than the surrounding parts. If, however, the irritation has been greater, the line is not pale, but red and slightly elevated, and bordered on each side by a shade of paler colour. It is hardly conceivable that these effects (which every one can study on himself) should not be due to vaso-motor action. There are other serious objections to this theory, that the remedies act directly upon the tissues themselves. If it were true, we should expect that all irritants would act in the same manner, the principal difference between them being their varying intensity, whereas there is hardly a variety of morbid action which is not imitated by them; thus we have infiltration of serum produced by nettles, hyperæmia by the rubefacients, inflammatory exudation by cantharides and ammonia, and suppuration by tartar emetic and croton oil. It will be observed that, according to modern pathology, these inflammatory changes are due to some reflex action on the vaso-motor nervous system.

Moreover, the remedies used locally are by no means only irritants; and in regard of some of them at least we must suppose the intervention of the nervous system, thus aconite will act as an anæsthetic, while belladonna will not merely relieve pain, but will relax muscular spasm (when applied to a rigid os uteri) and check secretion from the sweat-glands.

---

[1] *Practitioner*, March, 1874.

[2] Vulpian, *Leçons sur l'Appareil Vaso-moteur*, p. 46.

Let us now see if the vaso-motor system will afford us more assistance in explaining the phenomena in question. It is hardly necessary I should remind you that, according to the generally-received view, the blood-vessels are kept in a state of tonic contraction by means of the small nerve-ganglia which are in their immediate neighbourhood; this tonic contraction being either increased or "inhibited" by impulses from the central nervous system.[1] It has been suggested to me by a friend that probably the local action of medicines may be upon these small ganglia which govern the local circulation; and I see that recent experimenters have proposed a similar explanation for the dilatation of the iris produced by atropine.[2] If it be true that mydriasis can be produced by the local application of atropine to the eye of the frog, after removal from the body, there can be little doubt that this is the correct explanation of the facts, and the same is probably the way in which belladonna produces relaxation of a rigid os uteri, checks the secretion of sweat, and relieves superficial pain.

But I do not think we shall be justified in ascribing any of the other, and more important, local effects of remedies to the influence of these vaso-motor ganglia scattered throughout the body. In the first place, it will be observed that most of the phenomena produced by local irritants are not connected with increased tonus of the vessels (which we might perhaps ascribe to the perivascular gangalia), but to vaso-dilatation, which, according to our present lights, is certainly due to the inhibitory influence of the nervous centres.

There is, however, a far more serious objection to this view as well as to the one I first mentioned. Even if they sufficiently explained the *primary* effects of any topical irritant, they are purely local in their scope, and afford no explanation of those *secondary* results which we call "counter-irritation."

Now I am not going to enter upon a study of the very large question of counter-irritation, which is beside the immediate object of my paper, but I will mention the results of the very able debate on this subject some years ago in the *Practitioner.* The only theories then advanced were Dr. Risdon Bennett's, that counter-irritants act by way of depletion; Dr. Ross's, that they produced stimulation spreading by continuity of tissue; and Dr. Anstie's, that their effects were due to reflex vaso-motor action, and were propagated, therefore, through the nervous system. Certain clinical facts seem to be only explicable on this hypothesis, such as the action of blisters applied over the vertebral groove in relieving neuralgia.

---

[1] Vulpian (op. cit.) and Bowditch, *London Medical Record*, Feb. 24, 1875.

[2] V. Boeck, in *Ziemssen's Handbuch*, xv. p. 363.

Another instance (which comes within my own scope) is the common practice of using local applications over the seat of pain when we have to do with a neuralgia of centric origin. This can be hardly justified on any other view than Dr. Anstie's.

It will be observed, therefore, that I claim for the *primary* effects of an *irritant*, on the spot where it is applied, the same mechanism as Dr. Anstie considered necessary to explain its remoter *secondary* action, which we call counter-irritation. I am led to believe that in all cases where local applications produce hyperæmia, inflammation, or other changes of the kind, these are not brought about by any direct action on the tissues or nerves of the part, but are due to reflex inhibitory action on the part of the vaso-motor centres. Whenever consciousness is preserved we have evidence of the transmission of an impression to the nerve-centres, in the sensation of pain which precedes by a very appreciable period any vascular changes in the part irritated.

I have said that there is evidence for supposing counter-irritation to be due to a secondary effect, transmitted by means of the nervous system, and showing itself in parts supplied by the same nerve as was originally irritated, or in connected ones. So far I have said nothing which has not its analogies in other parts of the nervous system—in fact, Pflüger's laws of the propagation of reflex muscular action may be in great part applied to the propagation of reflex vaso-motor action, but clinical facts seem to warrant our going farther. Let us consider the secondary, distant action of belladonna when applied locally. If it be painted round the eye, it dilates the iris, and must do so by the intervention of the nervous system, seeing that it loses this power if the third nerve be divided (Schiff). If applied to the breast, or over an abscess, it diminishes the secretion of milk or the formation of pus; and this, again, it can hardly do except by an influence propagated through the nervous system. Yet, on any hypothesis of the action of belladonna, this brings us to the conclusion that an impression made on the nerve-fibres of the surface may transmit its own peculiar character to another portion of the same, or of a connected, nerve. There are other instances in practical medicine which seem to point to a similar explanation. Laudanum, chloral, camphor, chloroform, aconite, and other anodynes are applied over a seat of pain, and are supposed to relieve, even though the origin of that pain may be elsewhere. Again, it is possible—I think M. Gubler makes some such suggestion—that the effects of ipecacuan and antimony on the lungs may be due to a reflex propagation to the other branches of the vagus, of the effect they primarily cause by contact with the fibres supplying the stomach.

It will be remarked that, as I suppose, the *primary* effect in these cases (at the point of application) is due to the nerve-fibres being brought into actual contact with the medicament employed, it follows that if a *secondary*, or distant, effect of the same kind be also produced, it will be the same as would result from introducing the remedy into the circulation, save that it is local, and not general, in its action.

I have travelled very discursively over a wide extent of ground, and shall perhaps therefore do well to conclude by summing up briefly the chief results to which I have been led, and as to which I desire your opinion.

1. A remedy applied to the surface of the body may be absorbed, and may then produce certain direct effects upon the *tissues* of the part. Probably the local action of mercury and iodine are examples of this kind of action; perhaps, also, the pustulation of tartar emetic and croton oil is due to an eliminative irritation of the sudoriparous glands.

2. Paralysis of the terminal branches of the motor and sensory nerves, and the arrest of secretion by belladonna, may be explained by a direct action upon the nerve-fibres of the part.

3. Hyperæmia, inflammation, and all the more complex perversions of nutrition produced at the seat of application by remedies are due to reflex vaso-motor action, usually of the kind at present called inhibitory.

4. "Counter-irritation" and all the other *secondary* or distant effects of the local application of remedies are due to reflex vaso-motor action, excited by the *primary* effect of the application, and propagated by means of the nerves.

5. In some cases, at least, these secondary effects tend to reproduce in kind the impression primarily produced at the seat of application. According to the commonly received hypothesis of inhibition we should expect this law to apply only to such instances as are mentioned above under heading 2, and not to such local results as are due to reflex vaso-motor action.

THROMBOSIS PENIS.

BY R. CLEMENT LUCAS, B.S. LOND., F.R.C.S.

Assistant-Surgeon to Guy's Hospital.

A CURIOUS affection of the penis has recently come under my notice, and one which, so far as I am aware, has not hitherto been described; yet I should not be surprised to find that when attention has been directed to the condition in question, it will be found of not very infrequent occurrence. A stout plethoric young publican, twenty-three years of age, married, of medium height, but about thirteen stone in weight, consulted me under the following circumstances on July 12th, 1876:—Six days before he had gone down to Margate for a holiday, and he there met a paramour with whom he had been associated previous to his marriage, which took place three years ago. He remained with her two days and nights, and left her owing to an uncomfortable sensation of strain in the penis and a fear that he had contracted some venereal disorder. A day later he felt pain and itching along the right side of his penis, and observed a red line running from the base forwards to the prepuce. On the third day the foreskin and forepart of the penis had become considerably swollen. The day following, when I saw him, the prepuce was in a state of phimosis, and the whole penis swollen and œdematous. Between the dorsum and right lateral surface was a red line running forward from the base of the penis to the prepuce. The red line overlay a firm round cord the size of a large crow-quill. There was no glandular enlargement in either groin, but the superficial veins of the thighs were in a state of varicosity. Manipulation failed to cause any pus to escape though the phimosed prepuce, either from between it and the glans or from the orifice of the urethra. He had had no scalding, and, up to the time that it became no longer possible to retract the foreskin, he was quite sure no abrasion or pimple existed beneath it. He was ordered to bathe the organ with a solution of lead, and to support it in contact with the abdomen by means of a bandage.

On the 17th I saw him again. The œdema had so far subsided that it was possible to retract the prepuce, and the surface thus exposed was seen to be perfectly healthy. There was not a trace of sore or abrasion of any kind, nor was there any discharge from the urethra. The red line had almost disappeared from the side of the penis, but the hard cord could still be distinctly felt.

A week later the œdema had completely subsided, the cord was scarcely to be felt, and the parts had resumed their normal aspect.

I have related the case as it came before me, that those who read it may, as they do so, form their own opinions upon the nature of the affection. The appearance of the organ, taken together with the history of the immediate antecedent circumstances, suggested at once the idea of inflamed lymphatics consequent upon chancres beneath a phimosed prepuce. That the affection was not one of the lymphatics, I think, however, there is conclusive evidence. In the first place, neither before the prepuce became phimosed, nor when the swelling had so far subsided as to again allow of retraction, was there any evidence of pimple, sore, or abrasion that might have excited absorbent inflammation; and secondly, the glands in the groin did not show the slightest tendency to enlarge, as they would most certainly have done had the inflammation extended along the lymphatics. On the other hand, the œdema of the penis was greater than any I have ever witnessed consequent upon chancres or gonorrhœa. There was a doughy white condition of the organ, free from signs of inflammation, except along the line before referred to. The red line corresponded to the position of the superficial vein, which takes a course backward between the dorsum and lateral aspect of the organ, and which is often unsymmetrical. That inflammation and plugging of this vein gave rise to the swollen and œdematous condition of the penis, there is in my mind no doubt; and this explanation is supported by the fact that the superficial veins of the thighs and legs were in a varicose condition, and, by the patient's own statement, that the particular vein in question was always prominent, and probably in as unhealthy a state as those of the lower extremities. The importance of recognising penile phlebitis as an affection giving rise to symptoms not unlike venereal disease, yet entirely independent of venereal infection, will, I trust, be considered a sufficient reason for my bringing this case before the profession. Whether or not the affection be a rare one, the knowledge that a phimosed and œdematous condition of the penis sometimes results from an inflamed superficial vein may be of value in practice, and perhaps prevent errors of diagnosis which in their consequences might be disastrous.

CHLOROFORM.[1]

BY JOHN CHIENE, F.R.C.S.E., F.R.S.E.

Lecturer on Surgery, Edinburgh School of Medicine; Assistant Surgeon, Edinburgh Royal Infirmary.

THE present outcry against chloroform is the result of an imperfect understanding of, (A) Its physiological action; (B) The proper method of administration; (C) The dangers which may accompany its use, and their treatment; (D) The dangers which follow its abuse, and their treatment.

The more perfectly the surgeon understands these considerations, the greater will be his confidence when called upon to give the drug. Confidence on his part will impart confidence to his patient; knowledge of the dangers may make him more anxious at first, until he gains experience, but this is surely safer for the patient than the ignorant confidence of the administrator who has not this knowledge. Ignorance may be bliss; knowledge certainly is power.

(A.) *Its Physiological Action.*—Chloroform is, first, a stimulant; second, a sedative; when inhaled it passes into the blood and poisons *in a certain order* the nervous centres.

Its effects may be classed under five heads :—

1. Abolition of voluntary motion.
2. Abolition of sensation.
3. Abolition of reflex action.
4. Stoppage of respiration.
5. Stoppage of the heart's action.

Our object is to attain the first three effects, and to avoid the fourth and fifth. It is not necessary to discuss the exact order in which these effects take place. The great practical fact is this, that *the first three always precede the fourth and fifth* when the stoppage of the respiration and heart's action is due to the chloroform. It is to be remembered that when laryngeal obstruction occurs, respiration may cease from faulty or delayed treatment on the part of the administrator. The heart's action may cease from shock, too little chloroform having been given before commencing the administration. The action of the heart may also cease in consequence of engorgement occurring secondarily to a delay in the treatment of laryngeal obstruction. These dangers are preventible accidents which may occur during the administration; and are in no way to be confounded with stoppage of the respiration and heart's action directly due to a poisoning of the respiratory and cardiac ganglia by an overdose of the drug.

---

[1] Abstract of the Lectures on Chloroform delivered to my class of systematic surgery, *November* 19*th* and 20*th*, 1876.—J.C.

Chloroform is a *cumulative* poison; after a person is once fully under its influence, a very little more is required to place the patient in a dangerous condition.

Chloroform is also a *volatile* poison, and even after the respiratory and cardiac ganglia are affected, if the patient is kept alive for a time by artificial respiration, the effects of the drug will pass off, unless the overdose has been excessive.

(B.) *The Proper Method of Administration.*—Simple means are the best. A towel or handkerchief is better than any apparatus. If any apparatus is used, then the administrator trusts to the apparatus. The only sure trust is knowledge of the action of the drug, its dangers and their treatment. It is a matter of no importance how much is poured on the towel, except as a matter of economy; what has to be carefully attended to is the effect the drug has upon the patient. The administrator has to give his entire attention to the effect of the drug; as in all drugs, so in chloroform, different patients require different doses in order to attain the proper effect. The administrator must use his brains, and have his catch-forceps attached to his coat. He must have confidence in himself.

The flannel cap covering the nose and mouth, as first recommended by Dr. Skinner of Liverpool, and as used in the eye-wards in the Edinburgh Royal Infirmary, is not so good in general surgical practice as the towel or handkerchief, because, as will be afterwards explained, it is by the sense of touch that we best judge of the respiration, and the cap over the nose and mouth prevents the hand being next the mouth for this purpose.

The administrator must watch the *breathing* and the *appearance* of the patient. The sense of feeling with the hand between the towel and the mouth is the best guide to the breathing. The heaving of the chest has also to be watched. The heaving of the abdominal walls is deceptive, as this may be due to contractions of the diaphragm, which may continue for some time without any air entering and being expelled from the chest. Voluntary stoppage of the breathing frequently occurs early in the administration. Experience will soon enable the administrator to understand this, and to distinguish it from stoppage of respiration, due to the action of the drug on the nervous centres which govern the muscles of respiration. The sense of hearing may also assist in enabling the administrator to judge of the breathing. In antiseptic surgery, the use of the steam spray, accompanied by a hissing noise, interferes with the sense of hearing; in such cases the surgeon must trust to the senses of touch and sight. If the breathing becomes shallow or irregular, accompanied by gasping or sighing, then the towel must be *at once* removed from the patient's face. When the breathing becomes deeply stertorous, then the patient has as a rule had sufficient: the towel must be at once removed. Stertorous breathing is not in itself an evidence of danger.

The *appearance* of the patient's face is also to be watched. As long as the lips are red the blood is being properly aërated, the circulation and the heart's action are unaffected. If the patient becomes *livid,* or unnaturally *pallid,* then there is danger.

Tell the patient that he is to take long breaths. Give the drug slowly at first, in order to prevent a choking sensation. Do not let the towel rest on the face, because it is apt to cause blistering. After a time the patient struggles involuntarily: do not fight with him; guide his movements, and as the drug takes effect they will soon subside.

How are you to know when the patient has had enough? There are three signs, all of which should be made use of.

1. By touching the conjunctiva; if the patient does not contract his orbicularis palpebrarum, then he is generally sufficiently under the influence. Sometimes however this is not a certain sign; the action on the nervous centres is progressive; although sufficient for an operation in the region of the eye, the drug may not yet have affected the whole of the spinal cord, and reflex action in the limbs may not be abolished.

2. Muscular relaxation, judged of by raising the arm and seeing if it falls heavily by the side.

3. *Local* sensibility at the seat of the operation. This is to be estimated by the surgeon pinching the part to be operated on with a pair of artery-forceps.

These three signs are all useful, and experience will enable the administrator to estimate their proper value in each case. Take away the towel the *moment* the patient is under the influence. A very common mistake is to suppose that if the patient is breathing, then all is right. When the breathing stops, then the patient is on the point of death.

No attention is to be paid to the pulse: it is the last thing that stops. When the stoppage of the heart's action is due to the drug, then the patient is dead. Fortunately the poison is a volatile one, and if from ignorance too much has been given, interfering with the action of the heart, either directly by acting on the nervous centres which govern the heart's action, or indirectly by stoppage of the circulation, the heart may re-recover itself if the patient is kept alive by artificial respiration until the poison, in consequence of its volatility, is dissipated.

The administrator has to devote his attention to other things, and if he attends to the pulse he cannot pay sufficient attention to the more important signs—important because they occur earlier in the administration. Attention to the pulse by a second person is not necessary, because the signs which I have already given will be quite sufficient to prevent danger; there is a division of responsibility; assistance is apt to make the administrator trust to his assistant, and not to be sufficiently watchful himself of the other signs which guide him in the administration. It is not necessary to use the stethoscope in order to test the propriety of giving chloroform. If there is heart disease, or weak action of the organ, then these are the very cases in which chloroform is most useful, because they are most liable to the occurrence of shock, which the drug prevents by abrogating sensibility.

(C.) *The dangers which may accompany its use and their treatment.*—We must always be prepared for these. They may occur in any case, because the drug acts with much greater rapidity in some cases than in others, and we can never in any case foretell how rapidly the drug may act. The frontier line between the abolition of sensation, voluntary motion, and reflex action, and stoppage of the circulation and heart's action, is often very indistinctly marked. In old people this is the case; in them the drug must be administered with the greatest caution.

We may reach the dangerous effects earlier in some than in others, hence the great care necessary in every case. The order in which the effects take place is the same in all. This must be distinctly understood.

These dangers may be classed under four heads:—

1. *The tongue falling back* and closing the glottis, in consequence of paralysis of the muscles which hold the tongue forwards. The signs of this are lividity of the face and shallow breathing, as the air does not enter and leave the chest in sufficient quantity. The patient is in the same state as if a piece of meat had stuck in his pharynx, closing his glottis. The piece of meat is his tongue.

2. *The glottis closing,* due to paralysis of the intrinsic muscles of the larynx. The signs of this are lividity and a crowing sound, as heard in a case of croup, acute laryngitis, or laryngismus stridulus.

3. *Fainting.*—This is due to an imperfect supply of blood to the brain, the result of either the sitting posture during administration, as the dentist's chair, or to a naturally weak heart in the aged or prematurely aged person. The sign of this is unnatural pallor of the face, judged of more especially by the paleness of the lips. The faintness may be due also (at the commencement of the administration) to fear on the part of the patient. It may also be due to any cause which may give rise to faintness in general. In this case the chloroform has nothing whatever to do with the faintness; it may be associated with, but in no way due to, the chloroform. The faintness may also be due to want of confidence on the part of the administrator.

He fears the drug, from ignorance of its physiological action. He commences the operation before the patient is sufficiently under the influence. The patient is then in a condition which renders him most liable to shock. He is unable to brace himself up to bear the pain, his nervous centres are in a semi-paralysed condition. The unfortunate result may follow, namely, imperfection or stoppage of the heart's action, followed by syncope.

4. *Vomiting.*—This is only dangerous if there is food on the stomach. The food passes into the pharynx, and may pass through the semi-paralysed larynx and cause suffocation by passing into the bronchi. If the stomach is empty this danger cannot occur.

Treatment of these dangers:—

1. *The tongue falling back.*—The head is to be turned on one side in order that by its weight the tongue may pass to one side and the opening of the glottis may be free for the entrance and exit of air. If this does not *at once* effect the object, then the tongue must be removed from its dangerous position, and for the same reason that, if a person is choking from a piece of meat lying on his glottis, the proper treatment is to remove the obstruction. The best way to do this is to seize the tongue with the catch-forceps and pull it forwards, so that the tip of the tongue appears between the teeth.

2. *The closure of the glottis,* due to paralysis of the intrinsic muscles of the larynx.—To remedy this danger the tongue must be pulled forcibly out of the mouth. By so doing the epiglottis is pulled forwards by stretching the ligaments which unite it to the tongue; the epiglottis, passing forwards, stretches the aryteno-epiglottidean ligaments, and separation of the vocal cords follows. The action here is purely mechanical, and was first explained to me by Dr. John Wyllie, who first described this effect of forcible traction on the tongue.[1] This can be verified on the dead subject.

If these two dangers are not treated *at once*, the result is that respiration does not proceed, the blood is improperly aërated, the lungs become gorged, the heart becomes gorged, and the result is stoppage of the heart's action. If a rabbit is killed with chloroform and the chest opened, the heart will be found to be gorged with blood, and the contractions of the heart will be in abeyance; prick the heart with a needle, allow some blood to escape, and the contractions of the heart are re-established. This experiment seems to show that if by striking the chest and by artificial respiration the action of the heart is not quickly re-established, then bleeding from the external jugular vein should at once be resorted to. I have never yet required to have recourse to this remedy, artificial respiration having been sufficient. It must be remembered that it should never occur unless by a fault on the part of the administrator in not using at once the proper remedies—either removal of the tongue if its acting is a mechanical obstacle to the admission of air, or forcible traction of the organ if the obstruction is in the larynx itself, in consequence of paralysis of the intrinsic muscles of the organ.

---

[1] For an account of the valvular action of the glottis, see paper by Dr. Wyllie, *Ed. Med. Journal*, Sept. 1866.

3. *Treatment of fainting.*

1. *Preventive.*—Never give chloroform in the sitting posture. Never commence any operation, however trivial, until the patient is fully under the influence of the drug; it is far better not to give chloroform at all than to use it imperfectly.

2. *Curative.*—If it occurs as a result of a weak heart, or in consequence of an excessive loss of blood during the operation, or as a coincidence during the administration of the drug, then the head must be at once placed at a lower level than the body, the arms and legs must be raised to the vertical, or the patient may be held up by the heels, as recommended by M. Nelaton. The effect in all these ways is attained of restoring a sufficient supply of blood to the brain.

The good effects of Nelaton's practice are in my opinion of a twofold nature. 1st, By restoring the proper supply of blood to the brain in the most efficient and quickest manner. 2nd, In many of the cases the danger may have been at the opening of the glottis, due to obstruction by the tongue; inverting the patient will at once remedy this by causing the tongue to fall forwards. It will also be useful in cases in which blood, in operations about the mouth and nasal cavities, has passed into the bronchi, or in cases in which vomited matter has passed into the larynx, the foreign body being removed by inversion, as Brunel removed the half-sovereign from his bronchial tubes. The frequency with which Nelaton's practice has been attended by good results in cases of apparent death from chloroform seems to show that inversion may act in this twofold manner, because obstruction of the glottis is a much more frequent danger in the administration of chloroform than faintness, which, as far as my experience shows, is comparatively rare.

4. *Treatment of Vomiting.*

Do not give any solid food for four hours before the operation. In railway accidents and other sudden injuries in which it is necessary to give chloroform, the greatest care must be taken; if vomiting occurs during the administration, turn the patient on his side in order to allow the vomited matter to escape from the mouth, and prevent any regurgitation into the bronchial tubes. In such cases the administration of the chloroform should be abstained from until the stomach is empty.

When the act of vomiting takes place, the stomach being empty, then the administration of more chloroform is required, in order to stop the abnormal contractions of the muscular walls of the stomach. There is in such a case no danger from vomited matter passing into the larynx.

(D.) *The dangers which accompany its abuse and their treatment.*—If an overdose of chloroform is administered—and it must be remembered that some patients are very susceptible to the action of the drug—the nervous centres which rule the muscles of respiration are poisoned—the patient has died of an overdose of chloroform; then the treatment required is to pull the tongue forwards in order to allow air to enter or leave the chest by artificial respiration. *It is a volatile poison, and perseverance in artificial respiration must be continued until the volatile poison passes away.* A case recorded by Dr. J. J. Brown in the *Edinburgh Medical Journal* (Nov. 1874) well illustrates this important fact. By artificial respiration kept up continuously for 2¾ hours, he saved a patient in whom complete paralysis of the respiratory ganglia had occurred, but the cardiac ganglia were unaffected. The case also shows that the respiratory ganglia are poisoned before the cardiac ganglia. When the overdose is excessive, then the heart's action is interfered with; by artificial respiration, striking the chest-wall with a wet towel, and the use of the galvanic battery, it must, if possible, be restored.

NOTE ON THE QUANTITATIVE ESTIMATION OF UREA.

BY DR. W. J. RUSSELL AND DR. WEST.

In the course of some experiments we made during last summer with the process for estimating urea, of which we gave an account in the *Practitioner* for February, 1875, we found that the hypobromous solution decomposes in hot weather more quickly than we expected, and that it is very important that it be quite freshly prepared.

We wish to draw especial attention to this, and to suggest that the solution be prepared in the following manner:—

A solution of caustic soda is made in water in the proportion of 100 grammes of solid caustic soda to 250 cc. of water. This solution may be made in large quantities, for it will keep good for a very long time. To part of this solution bromine is added in the proportion of 25 cc. to every 250 cc. of caustic soda solution *at the time it is required for use.*

SOME REMARKS ON THE ECZEMA MARGINATUM OF HEBRA.

BY GEORGE THIN, M.D.

In a previous number of this journal (July, 1875) I described a case of eczema marginatum in which the disease had been acquired in the East. It was an interesting one from a diagnostic and etiological point of view, inasmuch as the eruption was not on the inner surface of the upper part of the thigh, which is its usual seat. It was present on three different parts, there being patches on the anterior surface of the upper third of the thigh, the shoulder, and the chin. The disease was on that occasion apparently removed by a vigorous application of the modified Wilkinson's Ointment, the patient much regretting that his inability to procure Goa Powder, or Poh di Bahia, rendered it necessary that he should have to undergo a somewhat severe method of cure. To anticipate his future wants, he procured a supply of Poh di Bahia from Singapore, and it was not long before I had an opportunity of witnessing the effects of treatment by this remedy.

In the autumn of the same year my patient returned, the eruption having again developed in the three places on which I had observed it before. The patches were the same, the rings on the shoulder and thigh being formed by small nodules, and the curved line on the chin forming a continuous reddened elevation. I was invited to observe the effect of treatment by Poh di Bahia, and I can testify that the remedy was for the time effective, and its application attended with little inconvenience. In five days the hard nodules on the shoulder had disappeared, and after a few more days those on the thigh and the ring on the chin could hardly be detected. Another temporary cure had been effected, speedily, and attended with less pain than had been produced on the previous occasion by the ointment.

In November, 1876, the patient came to me again. The three patches were in full development, exactly the same in appearance and extent as they were when I first saw them in March, 1875, and the description I gave of them then applies exactly to them now. The annoyance from the curve on the chin is considerable, as it readily attracts attention. The eruption had reappeared gradually some months after it had last yielded to treatment, and this time had defied repeated applications of the Poh di Bahia.

Practically, my patient is suffering from a disease that may almost be said to be incurable. The patch on the thigh has now lasted twelve years, and those on the shoulder and chin upwards of two years. During that time the eruption has not only resisted vigorous treatment, but has been uninfluenced by a constant and liberal use of soap and water. So much for the case which I previously described.

The learned editor of the *Archiv für Dermatologie und Syphilis,* in his reference to my previously published paper, remarks that Professor Pick has established beyond all doubt that eczema marginatum is a combination of eczema and herpes tonsurans, or tinea circinata, and he also affixes to my statement that the disease is rare in Europe a mark of interrogation. It seems to me that the subject will bear consideration a little further.

To take the case of the patient who forms the text of this discourse. It is typical of what is common in the East, and it corresponds accurately with the description given by Kaposi in the volume of Hebra's *Lehrbuch* just published. At page 648, under *Dermatoses parasitariæ,* it is stated that "eczema marginatum forms rings and curved lines which are not so smooth on the surface and do not run so equally as those of herpes tonsurans, but are broken by frequent interruptions, and are thickly set with nodules, vesicles, and scabs. Its course is extremely chronic, and persists on the same part for from ten to twenty years. It is by no means so easily conveyed to other persons as herpes tonsurans." These features, with the exception of the vesicles, which I have not observed in the present instance (their occurrence or detection is unimportant), are applicable to the case I have described.

Married men in my experience do not convey the disease to their wives, which would be the case if we had to do with common ringworm.

To recur to the appearances presented by my patient. There is no eczema on which the ringworm could have been engrafted. The alternative diagnosis is not common ringworm, which it only resembles in the eruption being circular, but syphilis. I am certain that on first looking at the case the idea of syphilis would occur to many observers as a point to be borne in mind, an idea which more careful observation, all question of history apart, would, however, definitely banish. Syphilis once excluded, there is no other feasible diagnosis of the curved line on my patient's lip (and of many similar cases) than that they are *sui generis.* I am one of those who believe that our knowledge of the fungi which produce some skin diseases, and the conditions under which they act, is not sufficient to warrant our rejecting unconditionally the evidence of a distinct group of symptoms and a special development and history.

It is possible that on the moist skin between the scrotum and thigh and in the axilla the disease may be indistinguishable from common ringworm when it occurs in these situations, but on other parts of the body the difference is striking enough.

I believe I recognize the disease in the following description, by an able and trustworthy observer, Dr. Patrick Manson, of Amoy (China). "Tinea corporis," he tells us,[1] "is common in Amoy up till forty. . . . The species of tinea imported from the Straits Settlements has a remarkable and characteristic appearance. It usually, when it has come under my notice, occupies a large extent of the surface of the body, spreading indiscriminately in all directions. The patches are beautifully defined with a wavy outline. The surface is marked by a series of more or less distinct concentric lines of scaling epidermis. The general appearance is like that of lichen on a weather-beaten rock. . . . The scales, too, are different from those in ordinary tinea; they are much larger, the disease appearing to undermine a long piece of the epidermis before it is cast off. The scales are about an eighth of an inch broad by a quarter or half an inch long at the margin of the patches, and rather smaller where produced by subsequent germination of fungus. . . . There is a large passenger traffic between this and the Straits Settlements, and many bring the disease back with them. It thrives for years on the person importing it, but it does not appear to spread to his neighbours. It is very difficult to cure permanently, and requires a long course of treatment and careful watching. I have never succeeded in getting a good specimen of the fungus."[1]

---

[1] Endemic Skin and Other Diseases of India and Hot Climates Generally. By Tilbury Fox, M.D., and T. Farquhar, M.D., p. 245.

If the disease is, as I have previously affirmed, a rare one in Europe, Dr. Manson's testimony and my own acquire more value. But the editor of the *Archiv f. Derm. u. Syphilis* questions that it is rare.

Even in Vienna I am disposed to believe that the disease is by no means a very common one. The number of cases of any of the severer forms of skin disease that appear in the statistics of the *Krankenhaus* of that city is not of much value in determining this point. The wide-spread reputation of Professor Hebra attracts sufferers from great distances—Jews from Poland, patients from Hungary, and even further east, and others from the countries to the north and south find their way to the Vienna skin clinique. If I may trust my memory, a very small proportion of the out-patients belonging to the city and its neighbourhood, who present themselves for advice, have the disease. I am certain that it is far from common in the St. Louis at Paris. I do not remember seeing a case in two different periods of several consecutive months, during which I watched the patients in several of the cliniques of that hospital. As regards England, I am fortunately able to give, by their kind permission, the experience on this point of Professor Erasmus Wilson, Mr. Hutchinson, and Dr. Tilbury Fox.

Professor Wilson has been good enough to give me for perusal the MS. of a memoir on this disease which he read in 1871 before the Medical Society of London. This dermatologist designates the malady, in recognition of the frequently papular nature of the margin, lichen marginatus. In the memoir two cases are described.

---

[1] In my own experience I have found it much more difficult to detect the fungus in eczema marginatum than in common ringworm.

In one, a man 61 years of age, the disease had spread over both hips, and had lasted two years when he came under observation. A coloured drawing of this case, which was shown by Professor Wilson at his lectures at the College of Surgeons last year, well illustrates a severe form of the disease as it affects this part of the body.[1]

The other, a woman aged 28, had rings and broken segments of rings on her shoulders, around her waist, on her flanks, nates, and hands, whilst there were a few small irregular spots on her face and neck. She had been affected with the disease twelve months. The boundary lines are described as uneven and broken, and made up of little clusters of two or three follicular papulæ, arranged in single file, and sometimes they constitute little independent rings, the breadth of the border being one or two lines. Then, at about a quarter of an inch within the boundary line, there is very frequently a second line or ridge more or less complete, the remains of a former boundary; sometimes even within the latter there may be found several linear segments of a still earlier circle, and scattered over the surface of the area a few independent papulæ.

After it had lasted two years the case was still under treatment. Professor Wilson remarks that the disease is not contagious, and is not communicated between husbands and wives.

In regard to the question of the comparative frequency of the affection, I am authorised by Professor Wilson to state that in his experience it is "exceedingly rare," an opinion that, as regards its occurrence in England, will for many persons be decisive.

Mr. Hutchinson's testimony is identical. He has found the disease to be "very rare."

Dr. Tilbury Fox, up to the time when I spoke to him on the subject last summer, had found the disease to be a "rare" one, but within the following two months afterwards, he saw, as he was kind enough to inform me, several cases—an experience which I believe to be unique.

I am more or less familiar with several of the most frequented skin cliniques in London, and looking back over the last two or three years, I can recall only one case—a person who had been in India.

It is within my knowledge that at one metropolitan hospital at which there is a large attendance of patients suffering from skin affections, not a single case of this disease occurred during twelve months, although during the same period some of the very rare forms of skin disease were observed.

I have further good reason to believe that at another large hospital the disease is unknown except by name.

On the other hand, ringworm is, as every one in England knows, exceedingly common with us. Eczema is also one of the most common diseases we have. If ringworm and eczema are the two factors that produce eczema marginatum, the affection should be met with frequently. I am satisfied that, on the contrary, it is exceedingly rare, and I believe that very few practitioners in England have ever seen it.[1]

If, on the strength of finding in the epidermis a fungus which cannot be distinguished from that found in ringworm, it is to be assumed that the diseases are the same, then we must believe that there are certain people into whose skin the spores can penetrate so deeply that it is almost impossible to eradicate them, that the spores can live and propagate there for twenty years, that they lose to a great extent their contagious qualities, and produce a distinct variety of appearances from that usually connected with them. We must further believe that this kind of skin is very frequently found in the Straits Settlements and some parts of China, and that the ordinary European skin assumes these qualities, whatever their nature may be, after residence in those climates.

That this is possible is of course not to be doubted, but it is so improbable that it can only be accepted after the strictest proof. With willing recognition of the value of the labours of Köbner and Pick, I cannot satisfy myself that this proof has been given.

---

[1] The disease as it occurs on the thighs and hips is well shown in Hebra's Atlas of Skin Diseases. The model in the College of Surgeons' Museum, which represents a case diagnosed in Paris as *Erythema Marginatum*, is believed by Professor Wilson to represent the disease we are considering. However, it illustrates an exceptional phase of the malady, both as regards situation, appearance, and apparently acute character. It differs in these points from all the cases I have seen. The chronic indolent type occurring on the trunk, of which any patient is an example, has not yet, as far as I am aware, been represented in any of the skin atlases.

There is an impression amongst some observers that in different countries the same skin diseases assume different types. My experience is against this view. The relative frequency of skin diseases differs in different countries, but when they do occur they present the same appearances and have a similar course. I have found no difference in the characters of skin diseases which I have observed in China, Vienna, Paris, and London, and as the area is a tolerably wide one, I can hardly believe that the alleged difference exists as regards any part of the world. On the other hand, some skin diseases that are common enough in one country are rarely, if ever, seen in another. I have reason to believe that lichen ruber, a disease sufficiently rare in Vienna, scarcely occurs in London, but a case I happened to see was in no way to be distinguished from those I saw at Vienna. The prurigo of Hebra may be said hardly to exist in London. It is exceedingly rare in Paris,—the one case I observed there was not, as far as I could make out, diagnosed as such by the physician under whose charge it was, but the appearances were exactly the same as those which characterised the best marked cases in Vienna. I have observed it in children in London, and it was there precisely the same as the cases in children observed in Vienna, and I have little doubt that when it does occur in adults, it is of the same Vienna type. Lichen scrophulosorum, another disease recognised in Vienna, is also exceedingly rare in London, but when it does occur it presents no difference in type.

So with eczema marginatum. It is common in the East, it is rare in England; but when it does occur with us it presents the same features as in the countries where it is common.

A word regarding the nomenclature. Professor Wilson, we have seen, designates the disease *Lichen marginatus.* I have used Hebra's term, because I believe it is the most widely known, although I am of opinion that the term eczema is apt to mislead those who only know the disease by description. The eczematous appearance is reduced to a minimum when the affection occurs on the trunk, and some observers would consider the term *lichen* as more appropriate to the cases in which papules are a prominent feature. But after all, the chief use of a name is to know things by, and as Hebra was the first to call attention to the disease as a distinct malady, it is likely to retain the term by which it was originally described, although Köbner, Pick, and Wilson have each, with some reason, shown that they object to it. The only permanent basis for a classification and nomenclature of skin diseases—a knowledge of their pathology—is not yet available.

Reviews.

The Practitioner's Handbook of Treatment; or, The Principles of Therapeutics. By J. Milner Fothergill, M.D. London: Macmillan and Co., 1876.

This work, as Dr. Fothergill intimates in his preface, "is not an imperfect Practice of Physic, but an attempt of original character to explain the *rationale* of our therapeutic measures." "It is designed," he says, "to furnish to the practitioner reasons for the faith that is in him; and is a work on medical tactics for the bedside rather than the examination-table." It may indeed be questioned whether a science of therapeutics is as yet possible, and Dr. Fothergill is too conscious of the enormous difficulties yet to be overcome to claim such a title for his book. We, however, gladly hail all attempts to elevate our art above mere empiricism, and as such cordially welcome his work. Much has been done of recent years in the physiological investigation of the action of drugs and the application of the results guided by an intelligent pathology to the treatment of disease. Empiricism, however, is still our mainstay, but it is all the more satisfactory when it can be shown to be in accordance with sound physiological principles. "It is certainly fortunate that the agents are not influenced in their action by any theories or hypotheses on which they are administered. If such were the case our therapeutics would indeed be chaos. Nevertheless, it is always agreeable to give medicines with a lively expectation as to what they will do. Such prescribing always gives a greater sense of satisfaction than when one is driven to prescribe *secundum artem,* or according to an unilluminated empiricism" (p. 13). Some would-be therapeutists have thought that because they have overthrown the commonly accepted rationale of an empirical remedy, they have therefore shown reason for rejecting it from the materia medica as worthless. Dr. Fothergill is not one of those who fall into such a fallacious *non sequitur.* "It must not for one moment be supposed that all empirical facts which physiology or pathology cannot explain, are to be rejected accordingly. What will become of all which we trust to learn if we are to cast away everything not yet illumined? We should be cutting ourselves off from some most valuable knowledge if we were to abandon the teaching of empiricism. It is certainly much more satisfactory to be able, by the light of physiological research, to elucidate what empiricism has demonstrated to be a fact. But where this cannot, as yet, be done, we must acknowledge the facts, and in doing so perhaps pave the way for forthcoming investigations which may tend to clear up our imperfect knowledge" (p. 63). These quotations will suffice to indicate the philosophical principles on which our author proceeds. In carrying them out generally and in detail Dr. Fothergill exhibits a wide acquaintance with recent physiological and pharmacological research, and a comprehensive knowledge of the symptoms and pathology of disease and of the methods of treatment. In his theories regarding the rationale of therapeutic measures, Dr. Fothergill, if he has not always entirely satisfied us, yet appeals to and ingeniously builds on apparently well-established experimental data. We, however, frequently shrink from following him in his pathological speculations. We might quote many instances of this kind, and the following may serve as a specimen:—Speaking of local cerebral anæmia, which in itself requires to be proved, Dr. Fothergill tells us that in states of depression "there is in all probability an anæmic condition of the posterior or occipital cerebral lobes" (p. 469). The state of the circulation, itself perhaps a secondary or concomitant effect, is we think too frequently brought in as a primary cause. But though we may not think that Dr. Fothergill has always succeeded in explaining the rationale of empirical measures, or that he is quite justified in many of his pathological speculations, he is always ingenious and suggestive, and never drifts from the safe anchorage of sound treatment. The first chapter of the work is devoted to the physiology of assimilation and of the agents capable of influencing it, including stomachics, hæmatics, and tonics. The next deals with excretion, which is treated from the standpoint of evolution, and the compensatory relations of the various excreting organs, and the therapeutical indications founded thereon are well set forth. Of alteratives Dr. Fothergill can give us no definite rationale, but holds to them as believing that "the right and skilful use of alteratives is one of the best evidences of an observant experience and of thoughtful practice" (p. 67).

The chapter on Body Heat and Fever is well written, and the relations of heat-production to heat-loss considered in the light of recent physiological researches, and our author properly insists on a due estimation of these two factors in our therapeutical measures, instead of merely registering so many degrees of heat on our clinical charts as something in itself definitive.

In his chapter on Inflammation, Dr. Fothergill discusses the pathology, the treatment of sthenic and asthenic forms, distinguishes between the cases where depressants may or may not be used, and insists very strongly on the necessity of discriminating between "simple and specific" inflammations in respect to treatment. "Again and again are inflammatory affections in people of middle age and advanced life especially, treated as simple inflammations, when in reality they are gouty exacerbations with local complications" (p. 119). The study and recognition of the diathesis or cachexia in all cases of disease are strongly urged, and our author devotes a special chapter to the characteristics of these following in the lines laid down by Dr. Laycock.

On anæmia, plethora, and congestion, Dr. Fothergill's remarks as to treatment are sound and practical. Growth and decay and the affections incidental to the various periods of childhood, adolescence, and old age are next discussed. On abnormal growths "no attempt is made to go into recondite morbid anatomy," but they are discussed mainly in their clinical aspects. Dr. Fothergill's pathology we might on several points question, but his views regarding hypertrophy of the heart and the treatment which it requires we fully concur in. "The chief therapeutic lesson to be learnt about hypertrophy is a purely negative one. It is this: It is equally foolish and futile to treat it as a disease" (p. 172).

On blood poisons, our author does not much aid us in the way of rational therapeutics, though he gives a fair account of empirical remedies.

In the chapter on Acute and Chronic Disease, Dr. Fothergill discusses the causes and methods of meeting tendencies to sudden death, and in this connection discusses the theory of stimulants and the use of alcohol. He regards alcohol not only as an evoker of force, but as oxidisable and therefore properly a food. "In administering alcohol as a stimulant we also give a food; if it were not so we should often exhaust the patient whom we really conduct through a time of peril into the haven of convalescence" (p. 225). In administering stimulants "the stimulation must bear a distinct relation to the forces of the system on the one hand, and to the habits of the individual on the other. If the stimulation be out of proportion to the forces of the individual, stored up in a static form—the reserve fund on which we subsist during enforced starvation—then exhaustion is directly induced; the strength is called out in useless displays of energy, and dissipated ere the hour of need arrives" (p. 223). This chapter is worthy of careful perusal.

A special chapter is devoted to Diabetes, Rheumatism, and Gout.

Under the somewhat enigmatical heading "Action and Inaction" Dr. Fothergill discusses "the various measures by which we act upon the nervous system, and the means by which we can control that system, or excite action in it, when it becomes desirable to do so" (p. 281). His suggestions are in many respects deserving of careful consideration, but we share with Vulpian considerable distrust in the too positive statements which are frequently made respecting the mode in which neurotic remedies act on the nerve cells and on the circulation respectively. The practical indications are very well handled. The chapter on the Circulatory System and on the rational treatment of Primary and Secondary Diseases of the Heart is an excellent one, and one which well sustains Dr. Fothergill's special acquaintance with this department of practical medicine. The next chapter is on the Respiratory System. The theory of expectorants is here discussed, and many ingenious suggestions and practical hints are given. Under the Digestive System he discusses the action of emetics and purgatives. The Urinary System and its derangements, and the relation of renal disease to heart disease, and the therapeutical indications both as regards drugs and as to diet and regimen, are ably handled in a special chapter. A chapter on the Reproductive System follows, which is an important and useful one. In the chapter on the Cutaneous System Dr. Fothergill discusses the action of diaphoretics, and of their opposites or agents which check perspiration, which he designates by the term "anhidrotics." We would recommend Dr. Fothergill to expunge such solecisms as *apyretics* and *anhidrotics* from his vocabulary. That which does not cause pyrexia or hidrosis—the literal meaning of an apyretic or an anhidrotic—may be anything or nothing. What Dr. Fothergill wishes to signify is something *opposed to* pyrexia or hidrosis. This requires the prefix ἀντί instead of *α* privative. The chapters on the Lymphatic System and on the Nervous System complete the therapeutical part of the work. A chapter follows on Public and Private Hygiene, in which, among other things, there is a valuable contribution by Sir Joseph Fayrer on the question of change of air in the treatment of diseases special in India. Next follows a chapter on Food in Health and Disease, and lastly a chapter, which the junior practitioner will find profitable reading, on the Medical Man at the Bedside.

We have given a rapid sketch of the plan of Dr. Fothergill's work in order to indicate its comprehensive character. The book is very readable, and throughout there runs a strong vein of individuality, which, in a work of this kind, is rather pleasant than otherwise. If it is in a great measure of a speculative character, this is perhaps more due to the imperfect state of our knowledge than to the turn of the author's mind. There is much food for thought, and if Dr. Fothergill's views are not conclusive they may suggest profitable lines of research. It is of great advantage to the practitioner to have general principles to guide him, and that he should not, when confronted with an assemblage of pathological symptoms, be at the mercy of an unreasoned experience of a similar case, or be obliged to swear *in verba magistri.* He will find in this work reasons for not looking upon drugs as grouped in fixed and unalterable categories, but learn when and why he may give opium to cause purgation and castor-oil to check it. We strongly commend it to our readers.

Clinic of the Month.

Alcohol as Food.—Some recent experiments by Mr. Wanklyn, made conjointly with Mr. W. J. Cooper, promise to throw some light on the much vexed question of the transformations of alcohol when taken into the stomach. A weak solution of alcohol —one part to a thousand of water—was passed many times through a silicated carbon filter, and was then examined. Four-fifths of the alcohol had disappeared, no acetic acid was present; but the solution contained twenty grains per gallon of organic matter which was not volatile at the boiling point of water. It was suggested, that the alcohol may have been oxidised into glycol; and if this be so, the transformation of alcohol by oxidation into a substance of nutritive value has been here accomplished; and this will have to be taken into account by physiologists in subsequent investigations of its value as food. If a quarter of a pint of brandy be taken in the ordinary way, this, when distributed through the fluids of the body, would give an alcoholic solution of about one part in a thousand, such as was used in this experiment. (*British Medical Journal*, November 4, 1876.)

Treatment of Acute Pneumonia by Turpentine.—Mr. R. E. Power, Dartmoor, has adopted the following treatment with great success in pneumonia:—

First, a hot terebinthinate stupe is applied until the skin is well reddened; then a little plain oil of turpentine sprinkled over the affected part; finally, a blanket wrung out of boiling water covered with a dry blanket. He has had patients delirious and gasping for breath, with sordes on the lips (patients who should have seen the doctor twelve hours previously), fall asleep as the last blanket was applied and awake out of danger. The internal remedies subsequently used were quinine and tincture of perchloride of iron. Diet: milk and water, beef-tea, lemonade *ad libitum*, occasionally wine. The application of the turpentine to little children must, of course, be modified to suit the age. In all cases, he keeps on the swathe three or four days or more uninterruptedly. He has found that, as a rule, the active treatment need not be pursued very long, the patient being generally out of danger in twenty-four or forty-eight hours. The sequelæ of pneumonia are much modified; frequently altogether escaped. (*British Medical Journal,* November 11, 1876.)

Liquor Ferri Perchloridi Fortior as a Local Application in Erysipelas.—Having during a course of several years, in hospital and private practice, used a variety of local applications in simple or cutaneous erysipelas, Dr. Leavens White has for the past two years discarded all for the above, which he has never seen to fail. The form in which he uses it is the following:—Equal parts of liquor ferri perchloridi fortior (*B.P.*) and spiritus vini rectificatus; the whole affected surface, and about an inch beyond the affected parts, to be painted over with the lotion by means of a camel's hair brush. (*British Medical Journal,* December 9, 1876.)

Remedies for Chronic Diarrhœa.— Dr. Kent Spender remarks that at this time of the year medical men are often troubled with cases in which a painless diarrhœa is the leading symptom. It may come and go with the changes of temperature (being specially influenced by dampness of air and decaying vegetation), or it may be the sequel of an acute form of the malady which was never properly cured during the summer. Assuming that most of the common remedies within reach have been tried and have only partially succeeded, he recommends firstly, a systematic use of the more powerful vegetable astringents somewhat as follows:—(*a.*) A teaspoonful of tincture of galls in an ounce of distilled water three times a day is extremely effective, and should be continued at least once daily for some weeks. (*b.*) The liquid extract of bael has many merits, and may be given in the same way. (*c.*) Salicin should be administered in a dose of five or six grains, perhaps combined with a grain of ipecacuanha. Let them be mixed into a couple of pills, and taken three or four times a day. This plan seldom fails to appease an obstinate diarrhœa. But, secondly, opium is now and then absolutely necessary, and he contends that it should always be prescribed in comparatively small and frequent doses, so as to obtain the least physiological with the most medicinal effect. Let the wine of opium be given to an adult in the quantity of three or four minims (with an ounce of chloroform water) five or six times in the twenty-four hours, and the remedy ought invariably to be left off by degrees. Speedy and permanent results may follow this method. One point in diet is important. Sometimes bread in any form disagrees, and, in the place of it, the patient ought exclusively to eat biscuits. (*British Medical Journal,* December 9, 1876.)

Bicarbonate of Potash as a Nerve-Sedative.—Mr. Erskine Stuart considers that the bicarbonate of potash can easily be demonstrated to be a nerve-sedative by any one taking a large dose of it, such as a drachm, in water. A peculiar tingling, numbing sensation is soon felt in the lips and cheeks, and afterwards in various parts of the body, extending gradually downwards to the lower limbs. He has used this drug, combined with the bromide of potassium in epilepsy, with decided effect and has not the slightest doubt that this sedative action on the nerves has a great deal to do with the successful treatment of rheumatism by the bicarbonate. As this is a fact, it is desirable, in treating rheumatic fever with this drug, to give it in sufficiently large doses, such as a drachm dissolved in water, every few hours. That some cases are best treated by means of alkalies there can be no doubt. Others, however, and especially those where there is great hyperpyrexia, are better under the salicine or salicylic acid treatment. (*British Medical Journal,* December 9, 1876.)

Croton Chloral in Neuralgia.—This substance, according to Dr. Markham Skerritt, is in reality butyl chloral, containing, as Liebreich's researches show, two more equivalents of hydrogen than was formerly supposed. It is essentially an anæsthetic, and, in large doses, an hypnotic. The anæsthetic influence always commences at the head, and only after this region is fully under the influence of the croton chloral, and sleep has been induced, does the anæsthetic effect gradually extend over the rest of the body. With large doses the respiration and pulse become slower, and a fatal result is due to arrest of the respiratory movements, not to paralysis of the heart. In this respect croton chloral differs from chloral, as with the latter death occurs directly from cessation of the heart's action. Dr. Skerritt prescribed the drug for 120 hospital patients at Bristol. In his hands—and he gives the details of many cases—croton chloral was of the greatest use in neuralgias of the fifth nerve, appearing in many cases to act as a specific. Its effect is, however, not always to be relied upon, and he has found that certain conditions are more favourable to its success than others; thus the most marked benefit attended its use in the neuralgias of young or comparatively young patients, especially in the headaches of anæmic women and girls. In these cases either cure or relief resulted in 86 per cent. of the cases treated. About the climacteric period the success fell to about 50 per cent., while, in later life, there was again a rise to about 60 per cent. At the climacteric period bromide of potassium seemed to be more reliable in its action. Again, when the headache occurred in patients with marked hysterical symptoms, the results were not nearly so favourable; in fact, he has arrived at the conviction that the presence of hysteria renders the success of the drug very doubtful. It is, he remarks, of course necessary to remember that in giving croton chloral for the neuralgic headache of anæmia we are treating only one symptom of the anæmic condition, and that we must also direct our attention to the removal of that state. Although he is not aware that this substance can be regarded as a direct tonic, yet it is certain that many patients do improve in their general health whilst taking it; it is an indirect tonic, and acts by the removal of what, perhaps, more than anything else conduces to anæmia, and malnutrition—that is, frequent or constant pain. Doubtless, when the general health has been improved by tonics, the neuralgia will in many cases disappear. But the special advantage of croton chloral is that it will often quickly remove that which chiefly distresses and wearies the patient; in not a few instances, where tonics have improved the general condition, but have left the headache untouched, croton chloral has quickly cured this, and a too speedy substitution of tonics for croton chloral has been followed by a return of the pain. The two kinds of remedies may be advantageously given at the same time, so that the croton chloral may keep the neuralgia in check, while the tonic attacks the original cause of the trouble. (*Lancet*, Dec. 9, 1876.)

Arteries of the Retina in Bright's Disease.—From observations of five cases Dr. Gowers confirms the usual observation that the arteries of the retina are contracted in this disease, but while this condition is usually regarded as a consequence of the retinal change, he insists that it may also occur quite independently of retinal change and stands commonly in direct relation to another condition, viz., the blood tension, which, in the cases examined, increased in proportion to the contraction of the arteries. He considers that this fact affords a direct proof of the correctness of Dr. George Johnson's theory, that the increased tension of the blood in Bright's disease is due, in part, at least, to contraction of the arteries. Examination of the retinal vessels may be useful in the diagnosis of Bright's disease in cases where the arterial tension, as shown by the incompressibility of the pulse, cannot be easily tested, on account of its smallness and the amount of subcutaneous fat or œdema. It may also help ultimately to distinguish between different morbid states, at present included under the term Bright's disease, and imperfectly distinguished from each other. (*Brit. Med. Journ.*, Dec. 9.)

Extracts from British and Foreign Journals.

Forcible Extension of Nerves in Traumatic Tetanus.—Dr. Paul Vogt, of Greifswald, records an interesting case in which this proceeding was successfully performed. The patient was sixty-three years of age, and had injured his right hand by the falling of a stone. The ragged edges of the wound in the palm quickly united under the use of disinfectant dressing, but the dorsal surface healed very slowly. Fourteen days after the receipt of the injury symptoms of tetanus made their appearance. Large doses of opium and morphia, with local bathing, were administered, but violent attacks of opisthotonos and rigidity of the back and lower extremities supervened, followed by intercurrent clonic cramps. The wound three weeks after the accident presented a swollen cicatrix in the palm, and a granulating wound on the dorsum of the third metacarpal bone. Neither the cicatrix nor the wound was abnormally sensitive, nor was any pain produced by pressure on the nerves of the forearm or arm. The region of the brachial plexus was however very tender, and when pressure was made here, tonic contractions of the muscles of the neck followed. As the treatment adopted had proved ineffective, Vogt recommended division of the cicatrix and detachment of the edges of the wound, with neurectony of the median and radial nerves, because the wound lay in the region of both nerves, and extension of the brachial plexus. This was carried out under the influence of an anæsthetic and with the employment of the carbolic-acid spray. After division of the cicatrix at the seat of injury, a longitudinal cut was made at the anterior border of the trapezius, about two inches above the clavicle, the brachial plexus was exposed, raised with the index-finger, and the loops were drawn out and vigorously pulled in a centripetal and in a centrifugal direction. A drainage tube was inserted, and the wound was dressed with salicylicated jute. It should be mentioned that the nerve-sheaths, being red, were freely divided. On awakening from the narcosis the patient was found to be practically cured. The mouth could readily be opened, the tongue thrust out, and food swallowed. There were no remarkable alterations either of mobility or of sensibility in the arm. A violent but short attack of vomiting occurred twenty-four hours after the operation. Recovery was complete in a fortnight or a little longer. (*Centralblatt für die Chirurgie*, No. 40, 1876.)

Traumatic Tetanus Treated by Nerve-Stretching, Calabar Bean, and Chloral.—Dr. Drake, of the Montreal General Hospital, records the case of a powerful young Swede, aged twenty-eight, who was admitted (August 25) into hospital with incipient symptoms of tetanus, consequent on running a rusty nail into the outer side of left foot on the 12th of August. He pulled the nail out at once and applied turpentine. On the day after admission trismus and opisthotonos were well marked; he was covered with profuse perspiration, and the symptoms grew rapidly worse. The slightest touch or movement brought on a severe spasm, accompanied by intense pain. From the favourable reports given in the journals of the effects of nerve-stretching, it was determined, at a consultation held in the afternoon of the 25th, to stretch the left sciatic nerve and then to administer calabar bean in large doses. The sciatic was exposed below the gluteus maximus, hooked over, and pulled forcibly downwards. The immediate effect of the nerve-stretching was very remarkable. When the nerve was seized with the forceps, the arms and legs were firmly fixed and rigid, the back arched, the head thrown back, and the teeth clenched, though the patient was under chloroform. When the first pull was given, the muscular rigidity immediately everywhere disappeared, and the patient lay quietly and without spasm on the bed. The pulse and respiration were not visibly affected. After being stretched the nerve was replaced, the wound closed with fine metallic sutures, and carbolised dressing applied. The wound in the foot was slit open with a bistoury and a few drops of pus let out; oiled lint was applied, covered with a hot linseed-meal poultice. On coming out of the chloroform the patient felt very comfortable, and drank a quantity of milk; neither spasm nor opisthotonos returning, he sank into a quiet sleep. At 5 P.M. $\frac{1}{4}$ grain of the alcoholic extract was injected hypodermically, and repeated every fifteen minutes for five hours, then $\frac{1}{2}$ grain was given every half hour. Slight spasms returned in the evening. One drachm of chloral in two doses gave him some sleep during the night. On the next day there was some return of the spasms; 50 grains of chloral were given. Two quarts of milk were drunk with difficulty, and the calabar-bean injections were continued. At 8.30 P.M. on the 30th of August, 87 grains of the calabar bean had been injected, and it was now given by the mouth with marked beneficial effect. The administration of chloral was continued in considerable doses Spasms, however, recurred, and, though he took large quantities of milk, he died on the night of the 8th of September. Whisky was given throughout the case after the 29th of August with great benefit, and Dr. Drake thinks that the man's death was really due to the culpable negligence of one of the attendants, who consumed the stimulant provided for him. Post-mortem examination showed that the nerve had suffered no injury. There were ecchymoses where the nerve had been seized with the forceps, and above this point, but not below the sheath of the nerve was much injected, as were also the membranes of the cord. (*Canada Medical and Surgical Journal.*)

Therapeutic Action of Salicylate of Soda.—Justi tested the value of the salicylate of soda as an antifebrile agent in thirty-one cases of acute articular rheumatism and typhoid fever, and arrived at the following results:—That in many, but not in all cases, in doses of from sixty to seventy grains for children, and of 100 grains in adults, it causes rapid diminution of temperature, so that a fall of 1°-2° C. may be observed in the course of two hours. Its antifebrile action attains its maximum six hours after its administration, and then gradually diminishes. Diminution of the pain only occurs in cases of acute articular rheumatism when the temperature has fallen at least 1°C. If the temperature continued to fall with the use of the remedy, the pain also diminished, so that the two are, he believes, proportional. The use of the salt should be continued for some days to prevent relapses, twenty or thirty grains being given *per diem.* Justi found this drug useful in the gastric catarrh of young children. (*Deutsche med. Wochenschrift,* 1876, No. 22.)

Boucheron on the Treatment of Sympathetic Ophthalmia.—Dr. Boucheron recently read before the Société de Biologie a paper, in which he proposes to substitute for enucleation of the globe of the eye section of the ciliary and optic nerves behind the eye. The following is his method of procedure. He divides the conjunctiva and the capsule of Tenon between the external and superior rectus about a centimetre from the cornea, and then with curved scissors penetrates between the capsule and the eye. Then drawing forward the globe, seized near the cornea with the forceps, he stretches the optic nerve so that the scissors touch it as a rigid cord. The optic nerve is divided, and the ciliary nerves and arteries are dealt with in the same manner by little cuts of the scissors. A little bleeding ensues, which is easily arrested by slight pressure on the eye. In order to be sure that the operation has been perfectly done, and that none of the ciliary nerves have been permitted to escape, after the section of the optic and ciliary nerves, the opening of the capsule is enlarged and the sclerotic seized by forceps, in the posterior hemisphere of the eye. This posterior hemisphere may then be easily turned forwards, so that the divided optic nerve is brought into view. The ciliary nerves may then be divided with ease, as they form a plexus round the optic nerve. Thus nothing can escape, and the operation is performed perfectly. He avoids cutting the insertion of the recti muscles, in order to preserve the anterior ciliary arteries, branches of the muscular arteries, and branches of the ophthalmic. Thus no obstacle is opposed to the re-establishment of the circulation in the eye by the anterior vascular system. Besides this, by retaining the recti muscles, he preserves to the eye its normal position and movements. The author proceeds to detail experiments which he has performed on the dog, the rabbit, and the guinea-pig. He also relates a certain number of observations of cases in which the optic and ciliary nerves had been divided by wounds. Now, in all these cases, unless some other cause of weakening was joined to the wound, he did not observe any grave lesions of the refractive media. The indications for the section of the optic and ciliary nerves may be given in a few words. This operation should be substituted for enucleation in all cases, unless suppuration of the eye is certain. But the great advantage of this operation is its power of being employed as a preventive measure. The International Ophthalmological Congress in 1872 accepted in principle that enucleation of a wounded eye should be performed immediately, if one wished to make sure of warding off often irremediable attacks of sympathetic ophthalmia. This radical and terrible measure, however, has not come into ordinary use. It is hoped that the operation just described, so simple, so inoffensive, and conservative in its nature will be able to afford to patient and practitioner important services. (*The London Medical Record*, Oct. 16, 1876.)

The Action of Salicylate of Soda in Intermittent Fever.—P. K. Pel states that he has employed the salicylate of soda in thirteen cases of intermittent fever which came under his care in Rosenstein's clinic in Leyden. Of these only three were cured, in four a transitory improvement was effected, and in the remaining six no benefit was derived from it. The doses amounted to from one drachm to half an ounce with phosphate or bicarbonate of soda. (*Deutsch. Archiv f. klin. Med.*, B. xvii., p. 314.)

The Poisonous Action of Pasteur's "Nutritive Fluid" when Cloudy from the Development of Bacteria.—M. Buchholtz made several series of researches to determine what was the minimum quantity of various antiseptics required to interfere with the development of bacteria, and to prevent their multiplication. These experiments were taken by E. Anders as the basis of his own researches, which were made to render more clear the relation of bacteria to the putrid poisons. He found, that the septic action of bacteria-containing "nutritious fluid" may still be exerted, even when the fluid has been rendered sterile from the bacteria contained in it, by antiseptics or by a high temperature. Transparent filtrates of fluids rich in bacteria have also distinct septic properties, though somewhat less than the original fluid. The residue left on the filter proved exceedingly active. By washing the filtrate with distilled water it could be rendered quite inoperative without causing the bacteria to lose their power of multiplication. The residue on the filter treated with dilute sulphuric acid, and again neutralised, yielded a material that possessed highly poisonous qualities. (*Deutsche Zeitschrift f. Chirurgie*, B. vii., p. 1.)

Local Action of Sulphate of Atropine.—A. Zeller finds that the addition of a small quantity of sulphate of atropine to a half per cent. solution of common salt quickly abolishes the movements of the white corpuscles of the blood. He states also that irrigation of the tongue of the frog with a one-tenth per cent. solution of sulphate of atropine causes dilatation of the small arteries, with increased rapidity of the current of blood, so that the white corpuscles no longer adhere to the edges of the vessels, nor make any attempt to migrate or wander. This dilatation of the vessels is purely local. Schiffer remarks that this dilatation may perhaps only be that which ordinarily follows, as Lovén originally pointed out, any local irritation. (*Virchow's Archiv*, B. lxvi., p. 384.)

Alterations in the Peripheric Cutaneous Nerves in Pemphigus.—M. Vulpian recently brought before the Academy of Sciences the results of some observations made by M. Dejerine on a woman suffering from general paralysis and trembling of the limbs, in whom, ten days before her death, large pemphigus-like bladders, filled with a citron-yellow fluid, rose on the extensor side of the extremities. The sensibility of the walls of the vesicle could not be ascertained, on account of the general condition of the patient. The entire vesicle was removed in one instance, macerated for twenty-four hours in a solution containing one five-hundredth part of its weight of osmic acid, and from this sections were made and mounted. The cutaneous nerves of the part had evidently undergone material alteration, being varicose, in consequence of the nerve-tubes having run together in the form of small drops. No axis cylinders could be discovered. The nuclei of the fibres did not appear to be changed. In the adjoining parts, when the skin was healthy, the curves were found to present their normal characters. The lateral columns of the spinal cord were sclerosed. In all probability not only the cutaneous extremities, but the entire length of the fibres was similarly affected, and such fibres were connected with the affected portion of the cord —a view, however, that it was impossible to corroborate. (*La France Médicale*, 1876, No. 2.)

The Treatment of Coxalgia.—M. Ollier, of Lyons, recently read an interesting paper on this subject in the *Section des Sciences Médicales* of the Association Française. He discussed the advantages and disadvantages of continuous extension and re-section of the head of the femur, and also the possibility of re-establishing movement. The practice of continuous extension, suggested by Bonnet, employed by Böckel, only succeeds in those cases in which sudden and violent extension, with subsequent absolute rest of the joint, would also succeed. It is not, therefore, a general but a complementary method ; a difficulty often met with is the impossibility of obtaining a firm and fixed *point d'appui* in the pelvis. Moreover, the pain is sometimes intolerable. Re-section of the head of the femur he considers to have given good results in the hands of some surgeons, but his own statistics are unfavourable to this operation, which deprives the bone of its periosteum and of its means of increasing in length. The resection ought to be performed, however, when the head is detached from the body, though it is then rather a case of removal of a sequestrum than a re-section. (*La Revue Scientifique*, Aug. 26, 1876.)

The Treatment of Inversion of the Uterus by the Elastic Ligature.—M. Arles reports the case of a woman who had had seven confinements, and three miscarriages, and who suffered from inversion of the uterus. M. Arles tried every method to effect a cure, but unsuccessfully. At length he determined to draw the inverted uterus downwards, and to surround it by a tube of caoutchouc drawn moderately tight. There were no septic symptoms, and the uterus came away in the course of a fortnight. He thinks this method is preferable to excision, to the simple or metallic ligature, to the écraseur, and to the galvano-cautery, and even to M. Denucé's method by *écrasement linéaire*, by which removal is effected in from twenty-four to thirty-six hours. (*La Revue Scientifique*, Sept. 2, 1876.)

Phosphide of Zinc.—Phosphide of zinc is one of the very few articles that have stood the test of experience, out of the very many additions to the materia medica introduced in recent times. In fact the large range of nervous affections that resist all forms of medication renders it very important to the practitioner that those remedial agents which have stood the test of experience in treating these often too stubborn affections, be brought prominently before his attention.

The phosphide of zinc, so far, has proven a most efficient agent in the successful treatment of the major part of a certain class of affections. In very many instances it has been far more curative than phosphorus. Considered in the light of a curative agent, the phosphide of zinc stands alone, not only for the certainty, but for the rapidity of its action, as a nervous tonic and stimulant. Its value in these respects has of late been fairly tested in the last and exhausting stages of typhoid and other fevers, where the nervous energies have been so far prostrated as to render convalescence, if not doubtful, at least tedious and protracted. The great therapeutic value of the phosphide of zinc is evidenced in the most distinct manner when used in the treatment of that protean form of disease known as neuralgia. While it is acknowledged by the best observers in the profession that the former is seldom curative in doses less than one-twentieth of a grain, often calling for as high as one-tenth or one-fourth, the phosphide of zinc yields as reliable and more speedy results, in doses of one-tenth to one-eighth of a grain. But few stomachs can tolerate more than one-thirtieth of a grain of phosphorus before manifesting symptoms of irritation, which, in connection with the "matchy" taste, soon evolved in eructations, following an efficient dose of phosphorus, seldom fails to engender disgust to its further continuance. Nor are these disagreeable results altogether abolished by any of the multitudinous formulæ now in vogue. On the other hand, experience with the phosphide of zinc has proven that it enters the circulation far more rapidly than the element, and when administered in doses of from one-eighth to one-twelfth of a grain, produces its curative influence far more readily, and is equally as permanent in therapeutic power. It has been found to be extremely serviceable in neuralgia in doses of one-eighth of a grain in the form of a pill—in angina, in loss of memory and impotence, in loss of sleep from continued mental anxiety, and generally in those nervous affections that owe their origin to exhaustion or depression of the nervous force. The form recommended by Prof. W. A. Hammond of zinci phosphidi, $\frac{1}{16}$th gr., extract. nucis vomicæ, $\frac{1}{4}$ gr., made up in the form of pill, is well adapted for use. (*St. Louis Med. and Surg. Journal,* Sept. 1876.)

On the Action of Chloral Hydrate and Croton-Chloral Hydrate.—J. v. Mering, from experiments with croton-chloral hydrate, finds that when given in small doses to rabbits it causes considerable slowing of the respiration before the cessation of the reflex action from the cornea, and when the corneal reflex is extinguished, the number of respirations is diminished by a half. The substance, 0·6 gramme, was introduced subcutaneously, or was injected into the veins in divided doses of scarcely half as much altogether. Similar results were obtained from parallel experiments with chloral hydrate. Croton-chloral hydrate acts upon the frog's heart similarly to chloral hydrate in even small doses, 0·025 gramme given subcutaneously causing cessation of its action. Blood-pressure experiments upon dogs, cats, and rabbits were performed with both substances. Small doses diminish the blood-pressure temporarily, whilst large doses diminish it continuously, till the blood-pressure curve reaches zero. The pulse-beats are at first increased by both drugs, and this increase lasts somewhat longer with croton-chloral hydrate. At a certain stage of the experiments the blood-pressure remained continuously low, in spite of great oscillations. This seems to show that the croton-chloral hydrate extinguishes the arterial tonus, the heart's energy still continuing, this being, as is known, asserted of chloroform and chloral hydrate. From these and former experiments there seems to be a great similarity in the actions of the three above-mentioned drugs. Lastly, the author combats Liebreich's theory of the action of croton chloral hydrate. According to his theory this substance in alkaline blood splits up into dichlorallylen, hydrochloric acid, and formic acid, and the former, analogous to ethyliden chloride, is the active factor. The author employed only the trichlorcrotonate of soda, which, even in the cold, in dilute alkaline solutions, passes into dichlorallylen. This substance was injected into rabbits, and even when five grammes were injected, it had no effect. (*Archiv für experiment. Pathologie und Pharmak.*, iii. 185, and *Centralblatt*, No. 37, 1875.)

Notes and Queries.

NOTES AND CORRESPONDENCE.

Ulceration of the Tongue as a Symptom in Hooping-Cough.—Dr. Finlayson, of Glasgow, writes: "Please correct in your own way an extraordinary error made by a correspondent in the last number of the *Practitioner*, who accuses Dr. McCall of ignorance of continental literature, in claiming the discovery of the ulceration of the Frenum linguæ in Pertussis. The ignorance is altogether on the part of your correspondent, who cannot have read Dr. McCall's paper in the *Glasgow Medical Journal* of 1871, as Dr. McCall quotes in the very paper your correspondent ventures to criticise almost exactly *the same names in the same order;* he also refers to M. Bouchut as his authority for the list of earlier writers. Probably your correspondent only saw the paper he criticises in abstract somewhere, but he might take a lesson from the person he criticises (if this is the case) in indicating when he has consulted the originals and when the abstracts of the paper to which he refers."

We have referred to the original papers of Dr. McCall and M. Bouchut, and find that neither of them lays any claim to the discovery of ulceration of the tongue as a symptom in hooping-cough. M. Bouchut refers to a number of German authors as acquainted with it so early as 1844, and Dr. McCall gives full credit to all who have treated the subject before him, and ample references to the papers of Bouchut and Charles.

Goa Powder.—Dr. A. K. Dyer writes: "In the number of the *Practitioner* for July 1875, in an article on the use of Goa Powder, I see that it is stated that the remedy was introduced into medical practice in Shanghai by a druggist. This is not correct. While resident in Shanghai I met with many cases of eczema marginatum, and had very great difficulty in treating them. Having heard of Goa powder, I was enabled to obtain a quantity of it through the kindness of a Parsee merchant, who got it sent from Bombay. I used it with the greatest success, and advised Messrs. Lewellyn and Co., druggists, Shanghai, to get a quantity of it. This firm is, doubtless, the druggist referred to."

Bibliography.

Elements of Pharmacy. Fifth Edition. By F. Harwood Lescher. Roy. 8vo. pp. 200. 7*s.* 6*d.* London: Churchill,

Book of Prescriptions. Fifth Edition. By Henry Beasley. 18mo. pp. 560. 6*s.* 6*d.* London: Churchill.

Sanitary Precautions against the Infectious Eruptive Diseases. By William Squire, M.D. 8vo. pp. 16. 1*s.* London: Churchill.

The Nurse's Companion: a Manual of General and Monthly Nursing. By Chas. J. Cullingworth, M.R.C.S. Fcap. 8vo. pp. 134. 9*s.* 6*d.* London: Churchill.

Tables of Materia Medica. Third Edition. By Isamberd Owen, M.A., M.R.C.S. Crown 8vo. pp. 40. 2*s.* 6*d.* London: Churchill.

Surgery of the Rectum. Fourth Edition. By Henry Smith, F.R.C.S. Fcap. 8vo. pp. 201. 5*s.* London: Churchill.

Diseases of the Bladder, Prostate Gland, and Urethra. Fourth Edition. By Frederick J. Gant, F.R.C.S. Post 8vo. pp. 470. 10*s.* 6*d.* London: Churchill.

Epilepsy: its Medical and Moral Treatment and Cure. By Frederick Goodchild, M.D. Crown 8vo. pp. 16. 1*s.* London: Churchill.

Tracheotomy, especially in relation to Diseases of the Larynx and Trachea. By W. Pugin Thornton, M.R.C.S. 8vo. pp. 70. 5*s.* 6*d.* London: Churchill.

Principal Health-Resorts of Europe and Africa for the Treatment of Chronic Diseases. By Thomas More Madden, M.D. 8vo. pp. 300. 10*s.* London: Churchill.

Sanitary Defects in Villages and Country Districts, and how to Remedy them. By George Wilson, M.A., M.D. Crown 8vo. pp. 42. 1*s.* 6*d.* London: Churchill.

The Harveian Oration 1876. By Edmund A. Parkes, M.D. Crown 8vo. pp. 32. 2*s.* London: Churchill.

⁂ Any of the foreign works may be procured on application to Messrs. DULAU, of Soho Square, W.C.;—WILLIAMS and NORGATE, of Henrietta Street, Covent Garden, W.C.; or BAILLIÈRE, of King William Street, Charing Cross.

Department of Public Health.

ON THE REGISTRATION OF DISEASE.[1]

BY WILLIAM SQUIRE, M.D., M.R.C.P.,

Physician to the St. George's (Hanover Square) Dispensary. Honorary Secretary to the Epidemiological Society of London.

THE immense results to medical and sanitary science, as well as to political and social statistics produced by the registration of deaths, lead to the prospect of a knowledge more complete and of more immediate benefit to result from a registration of disease. The registration of death, however inadequate as a measure of disease, however imperfect—for death is not reached in all diseases and in very varying proportions by others—yet as the ultimate result of all, and as a definite one, furnishes exact data which lend themselves to the definite treatment they have received at the hands of Dr. William Farr, who on them has raised vital statistics to the level of an exact science.

---

[1] The present paper is an extension of a paper in part read at the recent Sheffield meeting of the British Medical Association, in the Public Health Section, before the General Meeting at which the Committee of the Association on Registration of Diseases reported. The Report will be found at p. 211 of the *British Medical Journal* for August 12th, 1876; and an abstract of the remarks then made at p. 303 of the same journal. It will be seen by reference to the Report that the Committee since 1874 had narrowed the object of its inquiry to a registration of infectious diseases only. A proposal made by the Manchester and Salford Sanitary Association in 1872, afterwards endorsed by a joint Committee of the British Medical and Social Science Associations, was limited to the registration of infectious illness. Medical Officers of Health chiefly insist on the necessity of this, as providing a means by which they may be able to prevent epidemics. The conviction that such limitation of object would defeat this particular purpose, and fall short of what is attainable, induces me to avail myself of a further opportunity of discussing this question in greater detail, the editor of the *British Medical Journal* having kindly assented to my making such use as I might think fit of the paper communicated to the Association in furtherance of my present object.

The population and birth-rate known, the record of death, with its cause and the age at which it falls, has extended our knowledge of the natural history of disease, and discovered causes of excessive mortality, so as to enable us to remove some of them; in many cases death has been averted, and the general death-rate permanently lowered. What has thus been done by taking the one extreme result of disease leads us to see how much more might be possible, could we arrive at an earlier knowledge of the general distribution of disease, or find the points of its earliest incidence. Disease that does not directly lead to death yet often cripples development, destroys energy, or robs life of its joy and usefulness, would thus be met at its outset, and be prevented, repelled or defeated; for disease, not death, is the foe we are bound to oppose.

The first condition of success in such a contest is the obtaining early and complete information of the presence of the enemy, and of the chief points of attack. With the increase of public interest in sanitary questions, and of that intelligent appreciation of the many details bearing directly on public health, which sanitary reformers have lately done so much to promote, it ought not to be difficult to enlist the general public into an active co-operation in any means that can be devised for obtaining full record of existing disease. Our object is to consider what are the best means that can be devised. There are many indications that the time for such an inquiry has arrived. Already before the Society of Medical Officers of Health two years ago, before the Social Science Congress last year at Brighton, and before the Epidemiological Society of London, has the matter been brought prominently forward. The two former narrowed their discussions to the practical direct benefit that would accrue to the public by having early reports of infectious diseases brought under the notice of the sanitary authority of any district, so as to direct attention to the social or sanitary defects in urgent need of improvement, or to some special instance of intensified contagium, that might at once be destroyed. The latter, ably introduced by Dr. Ballard, had in view a registration of disease as complete as that of mortality, which should throw light upon the causal relations of all diseases, and unravel the complicated problems presented by epidemics.

The objects of registration of disease are then twofold—the scientific and the practical; they must be as distinctly separated in idea as they are in object, but it is well to keep them both before our minds whichever end we may have in view, and in promoting the one not to lose sight of the other.

The scientific inquirer, following the course of disease, as influenced by season and locality, by an increasing or receding infection on variously susceptible communities, and wishing to trace its earliest beginnings, has his perception quickened and his energy increased by seeing how his knowledge may be usefully applied.

Nor should the practical sanitarian neglect the wider bearings of disease, or confine his attention to the worst cases only; for the slightest ailments around us often call as clearly for "sweetness and light," and would as often supply a warning that might be of general service.

It may be well here to give a summary of what has already been brought forward by others, and to examine in the order of their occurrence the suggestions offered at the previous discussions of this subject. The first, as might be expected a somewhat crude one, was that medical men should be paid a shilling for reporting cases of infectious illness to the sanitary officials. The next in order occurs in the introductory address delivered at University College last year by Professor Corfield; he there says, "It would be very desirable if a law were passed compelling all medical men to report every case of infectious disease which comes under their cognisance to the medical officer of health of the locality." The last and most important examination of the question is that so well opened at Brighton by Dr. Fussell. He says, "In the first place, it is absolutely necessary that some person should be made responsible for giving notice to the sanitary officials of every case of infectious illness;" and concludes, "the father and mother of the patient, or master, or mistress of the house, must be the parties who should be held liable for giving the necessary information, for this simple and obvious reason, that many cases occur in which no doctor is called in." Dr. Taafe, medical officer of health for Brighton, did not think it would be right to compel medical men to give the information, or enforce as a duty what might seem like a breach of confidence towards their patients, but that there should be a compulsory registration of infectious diseases by the friends of the sufferer. (*Social Science Transactions*, 1875, pp. 501, 517.) Then, Dr. M. K. Robinson, medical officer of health for Dover, well known for his successful sanitary work in Leeds, pointed out that to make it compulsory on medical men to report cases of infectious diseases coming under their care would really defeat the object in view, and prevent people sending for them; even as it was, he found the majority of cases were attended by druggists.

Here then is a first difficulty fairly before us. It is evident that these objections do not do away with the necessity for a medical report in infectious diseases, for without it how are we to know what the disease is? What they do, is to show clearly the modifications required in Dr. Corfield's desideratum. Our profession has had recent occasion to look with fear and suspicion upon any legislative enactments bearing upon it; fortunately in this case precedents as well as reason point in other directions. The analogy of the cattle plague and vaccination acts entirely support the conclusions arrived at by Dr. Fussell—that information as to the existence of infectious diseases is to be exacted from the parents and householders and not from the doctor.

In any possible scheme of the kind we must bear in mind that very much will be required of the doctor; no limitation can be placed on what might or might not be required of him; and, with a good purpose to serve, and a definite object in view, the care and trouble a doctor will take is inexhaustible. The objects then of a registration of disease are among the chief inducements to the medical profession to take an active part in it. The medical officers of health agree that the first step towards improving the health of their districts is to be *informed* of the diseases prevailing in them. In the instances wherein they have sought this information from their professional brethren, they have obtained it with remarkable readiness. I know one energetic officer in my own neighbourhood who encourages reports from medical practitioners in his parish, by means of a printed post-card; he has induced the vestry to ask for reports of serious illness met with in the parish to be returned by the resident medical officer of a local dispensary; but the information supplied is too incomplete to be of much use.

Dr. Fussell uses a form which he says answers very well in his district; by its means the medical practitioners inform him of any cases of infectious illness; and though some signal failures have occurred from concealment on the part of lodging-house keepers and householders, against whom compulsory powers are required, the information is readily given by the more intelligent part of the community, and by the doctors, because a directly useful object is served: an improving sea-side place is, in fact, kept healthy so as to encourage visitors. I suppose in other places this would encourage residents. In Dr. Corfield's district the information is sought, so that the sanitary state of the house may be inspected and the premises thoroughly cleansed and disinfected after infectious illness; the parish has an efficient hot chamber for storing clothes and bedding; conveyances by which persons and their effects can be removed without fear of spreading infection; fever-wards in the parish, and such a relation with the London Fever Hospital and the hospitals of the Asylum Board, that certain cases can at once be isolated. Here are offered practical advantages enough to secure the co-operation of the most practical of our profession, yet the information obtained is so far from perfect as to call forth the desire I have read for the intervention of law. In another place the absence of fever-wards has been made a reason for withholding returns of infectious disease.

Something more than a direct practical end is required to elicit all the information. All the practical benefits flowing from any source are not obvious at once. One practical man sees one end clearly, and not another; many men have their sympathies and efforts enlisted by the scientific aspect of a question who would otherwise be passive. The scientific side of the question was not quite omitted from the Brighton discussion. Dr. Hardwicke (I quote from the official *Transactions*) "noticed that we were still without any register of disease, and expressed the opinion that until the Registrar-General applied himself to produce such a register, we were working very much in the dark." The president of the Health Department, Dr. Richardson, supported this opinion. He said: "It was perfectly certain that we could not judge of the state of disease by the mortality." They might have a very mild form of infectious disease, which did not show much increase in the mortality in one part of the year, though just as infectious as when it had become very fatal at a later time. Registration of disease was therefore what was to be insisted on, not only for watering-places, but for every other place. "He believed we should never arrive at any correct data until we had a complete registration of disease as well as of death."

A registration of disease has however a different purpose to serve from that of death, and need not be complete. We could hardly hope ever to make it complete, nor is this the end desired. Many chronic diseases, many constitutional diseases, many accidents of age or other infirmities, may be excluded without prejudice to the more general objects to be attained. Some desiderata are given by Dr. Ballard; he takes influenza, and says all we know of its coming and going is "a tangled skein of apparent contradictions, and yet if there be a law governing these, and outbreaks of influenza be not exceptional instances of non-coherence among mundane phenomena, there can be no such contradictions in point of fact. It remains for modern inquirers, with greater facilities for their inquiries than their forefathers possessed, to determine these relations; and let us not forget that in doing this for influenza it is not unlikely we shall be taking a most important step in unravelling the complication of questions which still surround such diseases as cholera, the specific fevers, and the epizootics." He goes on to say that there are other much more common maladies, "which may be more readily studied and with the prospect of earlier fruit. There are the acute pulmonary affections, which cut off so many of our young and old in the winter months, the diarrhœal affections which destroy our infant population every summer, the specific fevers and such rarer epidemic diseases as diphtheria and cerebro-spinal meningitis. And I mention these diseases because they are at our very thresholds, and every practitioner in the kingdom who pleases to do so can lend a helping hand in their etiological investigation." Dr. Ballard's aim is, he says, "as perfect a system of registration of sickness as is practicable under existing circumstances of professional education. Towards the attainment of this the medical officers of health throughout the kingdom might if they pleased contribute most valuable aid. An acquaintance with the amount and character of prevailing sickness is essential to them for the due and efficient exercise of their office. One reason why records are not properly kept is that the persons who ought to keep them have not seen the use of keeping them. If the information were sought regularly, and were seen to be applied to a useful object, I cannot think that it would not be forthcoming. I have myself made the effort in the district of London which was formerly under my supervision. I met with difficulties, as a matter of course, but I surmounted them one after the other, and for several years kept on foot a tolerably satisfactory register of public sickness. There is no insurmountable difficulty in collecting facts as to sickness sufficiently precise for practical uses, provided the collector sets about the business discreetly, and is sufficiently patient, persistent, and forbearing. But when the facts have been collected, the labour of analysis is such as no man engaged in professional practice can hope to be able to supply." He goes on to say, "How to set about the collection of sickness statistics has occupied the thoughts of many men more fitted for consultation upon it than myself. All I desire to say now is that the registration should include all cases both medical and surgical, and not be limited to the classes of disease liable to prevail epidemically. And for this reason,—it may be that certain conditions so affect the human constitution as to lessen its power of resistance to all causes of disease, therefore I would not exclude surgical cases from enumeration."

These extracts are sufficient to indicate the widely-acknowledged necessity for the registration of disease, the stage already reached in striving after some form of it, and the different objects animating the pioneers on this path of progress.

No practicable scheme for the registration of disease could be founded on the views of either party exclusively: the one craving for the widest information and the minutest details possible to collect and formulate; the other asking for the worst cases of disease, or for infecting diseases only, to be reported, would both be equally disappointed.

If to ask for a registration of all diseases be asking too much, to ask for a notification only of infectious diseases is asking too little, and for a report of severe cases only, useless.

It is the milder cases of epidemic diseases, so called, that are to be guarded against; these carry the torch which will commence the conflagration we are called upon to prevent.

If the registration of all infectious diseases only could be made compulsory either upon householders or doctors, it would at this point fail; the doctor would not be called in to the milder cases, and they would be unrecognised or concealed.

Without compulsory powers it would be impossible to make any scheme thoroughly effective. The registration of all diseases should be encouraged, the imposition of fines should be restricted to those cases only where it was found that infectious diseases had not been reported. The occurrence of infectious diseases would soon be known, and it would be easy to discover whether any notification of illness had been sent to the proper authority. The enforcement of the fine might be made to depend upon such neglect in the case of infectious disease only. In all cases the responsibility to rest either with the parent or householder. In some cases the individual attacked might be made responsible for reporting the existence of infection. The obligation to be incurred by the doctor is not that of acting in any way as an informant, but such only as compels a clear, plain, truthful certificate of illness when called upon.

The difficulties surrounding the whole question of the registration of disease are commensurate with the importance of the subject. The complex machinery of our social life renders accurate information on many social accidents a great and pressing necessity; it furnishes at the same time some means for obtaining and utilising such information. The establishment of sanitary districts with their medical officers of health affords the centres of action by which a complex system might be worked, gathering and assorting the local information for immediate use: transmitting some to the district registrars, or reporting to some central medical board, so that the inferences of a more general utility might be gained from the collected facts.

The sources whence information might be derived are numerous: the poor-law system of medical relief—medical charities—hospitals—dispensaries—public institutions—schools—households.

I will speak of the last two more particularly. First, as to schools. The institution of school-boards and universal, almost compulsory education has hastened the necessity for some action in the direction I advocate.

The spread of certain epidemics can be directly traced to the action of the new educational system; the same system might be made a means of *preventing* the extension of disease. The way in which the masters of elementary schools might assist the medical officers of health was pointed out at Brighton by Mr. Rathbone of Liverpool last year. He, as a manager of such a school, had a complete system of visiting established, so as to know for what illness any child was absent: he said, "No case of fever occurred which did not go up to the medical officer of health. The death-rate had failed to give them some information which was of much importance as to the spreading of diseases amongst them. In the case of measles it was a long time before its presence was shown in the death-rate."[1]

Dr. Ballard found in his register of disease for Islington that scarlet fever was pre-eminently a disease of the summer quarter. From March to June there was a *steady* increase of cases, and in July a sudden increase. The prevalence of the disease was not shown by the mortality till two months later, and this, as we know, is not at its height till late in October—always its culminating point for London.

The slighter cases of scarlet fever have first come under medical care for dropsy, or some consequence of exposure during the desquamation process, weeks after the disease commenced. Hooping-cough has passed almost unnoticed in one child, until another in close relation has become seriously ill. Measles, scarlet fever, hooping-cough, diarrhœa, even diphtheria are sometimes not brought under the notice of the doctor at all:

---

[1] *Transactions of the National Association for the Promotion of Social Science*, 1875, p. 511.

yet from houses so infected even clothes, as well as children not themselves ill, may carry infection to other houses or schools. No wonder that among ignorant people these diseases spread unknown. We *may* wonder that they should be spread by the authorities intrusted with instruction, yet so it is; school-board officers have sought out convalescents from measles, scarlet fever, and, I believe, hooping-cough, compelling them to return to school to infect other scholars. It would be well the mischief ended there, and did not spread disease among their younger brothers and sisters. It might be enacted that a child should pass in measles as in arithmetic at some chosen time; but, to encounter unexpected disease, and to risk sacrificing the health and often the lives of the younger members of a family, is making the tax for instruction too severe.

We might reasonably look to schools for contributions of valuable health statistics. At most of our large public schools the common infectious illnesses, gone through by the pupil before entering, are registered, the parents giving the necessary information. I presume record is kept of all outbreaks of infectious disease within the school, and that reciprocally the parents of any sufferer would be informed of the illness of their child, and of its nature. What works well in schools of from 500 to 1,000 boys collected together from the upper classes of society ought to be practised in other large schools.

No school should be exempt from a care for the health of its scholars; it is necessary that a record of their diseases should be looked after by the managers; all we want for more certain utility in this case is that a copy of such record should be forwarded to the medical officer of health for the district. The case as to private houses presents more difficulties, but no impossibilities.

Householders apply to the local authority if their drainage or water supply is defective, if their dust-bin is neglected, or their neighbour's pigstye offend them: let them be encouraged to report the ailments that befall their families. A clerk who receives complaints for the inspector of nuisances to investigate could receive these reports and bring them under the notice of the medical officer of health, who might order a medical certificate to be forwarded, or investigate the circumstances for himself.

All acute diseases, all infectious diseases, all children's diseases, ought to be reported. The acute cases guide to where there is suffering and where there is most need of help—often to the discovery of infectious illness of which it may be the local sign. The slightest cases of infectious diseases must be known and attended to.

Any disease among children is likely to lead us to some of the causes deteriorating the general health; children are the most sensitive to insanitary conditions. All the diseases we most wish to prevent are most active and fatal amongst children in the first five years of life; in the next five or ten years the constitutional or developmental diseases show themselves. These might often be arrested; deficient cubic air-space and much else might be remedied that leads to struma and disease of bones and joints, crippling growth and strength. We see how much could be effected without the regular assistance of the doctor; but no specific information could have any value without his concurrence: he would have often to point out what should be done, give the necessary certificate, and even send it himself to the local centre. The responsibility of all this should rest not with him, but with the head of the family or household.

For those who have duly reported the existence of certain specified infectious diseases, the necessary cleansing and disinfecting might be done free of expense. Wilful concealment of these might be met with a fine, but further than this on the path of coercion I am not prepared to go. I believe a penalty can now be enforced for conveying patients with infectious diseases in public carriages. It might be right to issue medical certificates of unfitness to travel or attend school: no certificate would do away with the risk arising from an infected house or from early convalescence. The members of our profession might further co-operate in giving returns periodically of acute disease coming under their notice.

By reporting generally on disease there is nothing invidious in the doctor having to report infectious disease, and he will previously have had occasion to advise its notification.

In the case of dispensaries, medical charities, and the system of the poor-law medical relief, some increase of pay would be justly due to certain of the medical officers for the increased work involved in the duty of reporting; direct remuneration for reporting, I believe no member of the medical profession would consent to receive.

The first requisite towards a useful registration of disease is the assurance that an efficient system could be organised for dealing with all the reliable facts of sickness and its fatality, with a sufficient staff to analyse, compare, and work out results. One thoroughly trained clerk at each centre of local government, the intervention of the medical officer of health, and a central department to harmonise and regulate the whole would seem to be absolutely essential. The Local Government Board could do much towards this, and the Registrar-General's Department assist. One of the smaller aids to be expected from government is that forms, printed with headings, and space for children's health report, might be supplied from the local sanitary authority to the medical practitioners of the district, which should be returnable free by post when sealed.

Such a system would encourage free communication, and soon attract information on all the subjects required.

The medical officer of health requires the assistance that would be afforded him by a well-trained statistical clerk; he also requires the support of a well-organised central authority: these things as they should be, his function would be more definite, and more widely useful. The medical attendant would then be in fuller accord with the health officer, and would communicate freely with him.

No sickness returns without medical authority should be relied on; the responsibility of sending returns for all sickness among children, or for all acute disease under some specified age (say fourteen years), and for certain specified infectious diseases, should rest with the head of the family, and not with the doctor.

The registration of all infectious diseases, or of all so-called epidemic diseases only, would quite fail in the chief objects for which this limitation is urged; the registration of all children's diseases would best lead to the end in view; short of this, a health record for schools would guide to valuable results. The investigation of colds and sore-throats would both illustrate widely-spread causes of disease, and discover not only sanitary defects in the dwellings, but often the influence of the worst infection of diphtheria, scarlet-fever, and hooping-cough; it would not only discover, but often tend to remedy the mismanagement of those diseases, and of measles, by chemists and ignorant nurses.

The great objection to the registration of disease is that it can never be perfectly exhaustive, and must vary much in accuracy. The value of the work carried on at the Registrar-General's Department is dependent on its accuracy and completeness. The returns obtained are full and exhaustive for the whole country, and the powers of the government are exerted in their collection. What is necessarily omitted in such returns is more than compensated for by the element of certainty introduced. Without the patience, skill, and care devoted by Dr. William Farr to elicit the value of the facts thus collected, such great results would never have been obtained. This work has required the labour of a life to organise, assiduous and efficient assistance to maintain. Could we hope that the more numerous and less definite health returns should be as successfully dealt with? Some such assurance is required; but let not the perfection of one system of registration deter or altogether prevent us from attempting another. Registration of sickness could never be perfect, but it has a function of its own in no way dependent on its embracing every form of disease. It would not be a substitute for the register of deaths; it would give useful warning beforehand; but it would only be of full use and value when taken in conjunction with the mortality returns. The object is a different one, and our means may be modified towards its attainment.

ON AN OUTBREAK OF DIPHTHERIA: AN OFFICIAL REPORT.

BY MR. W. H. POWER.

(One of the Medical Inspectors of the Local Government Board.)

Brailes is a parish in the Shipston-on-Stour Rural Sanitary District; it comprises 5,220 acres, and had in 1871 a population of 1,285. It is situate geologically upon the several series of the Lias formation. Nearly three-fourths of the total population of the parish reside in a valley and upon its western slope, in two aggregations of dwellings, Lower and Upper Brailes, which together constitute Brailes village. The village is wholly situate on Lower Lias clay, but eastward and westward rising ground consists mainly of marl-stone, capped at its higher points with Upper Lias clay and Northampton sand.

The village of Brailes is very old, and consists essentially of a single street, extending, inclusive of the interval between the two aggregations of dwellings, over upwards of a mile of the high road between Shipston and Banbury. Some of the cottages, especially in the thickly-inhabited parts of the village, either closely border the highways or are crowded together on insufficient area. Many are wholly without gardens. About many of the dwellings free circulation of air is next to impossible. In addition, many older cottages are small, ill-contrived, and have insufficient window space; in some instances windows are not made to open. Some dwellings are much dilapidated, and in their present condition are not fit for human habitation. Cottages without back doors or back windows, in the Square, Lower Brailes, and others in Friar's Lane, are instances.

Water supply is abundant, and derived from wells and springs. The former, sunk (in a few instances bored) to varying depths in the clay, are most of them in effect merely surface wells, the dry steyning of their interior admitting of ready soakage into them of surface water, and of water from the superficial soil overlying the clay. Well-water is by the inhabitants commonly, and probably justly, regarded as bad water, that of many wells being, from its taste, smell, or colour, obviously unfit for drinking purposes. Hence it has resulted that certain private wells, the waters of which present few objectionable physical characters, have been much resorted to. But even of such wells the water must be held of doubtful quality, and analysis has shown in regard of one in high repute among the inhabitants a large amount of organic impurity. Springs are numerous on the confines of the village at the junction of the marl-stone with Lower Lias clay; and at higher points on neighbouring hills capped by Upper Lias clay and Northampton sand, water rises in abundance at the junction of the two latter formations. The lower series of springs are made use of by families in their vicinity, and here and there are led in drain-pipes to supply dip-wells in the village. The upper springs are not (except for cattle) utilised, and much good water runs to waste, the remainder finding its way, as eventually does also the water of the lower springs, more or less directly to a brook which traverses the village. As regards quality, the spring water is doubtless in the first instance good water; but in its course to the several dip-wells of the village it often has opportunity for contamination, and the dip-wells themselves are liable from their surroundings to pollutions of a sort similar to that to which the other wells are undoubtedly in many instances subjected.

Excrement disposal is almost wholly by pit privies. The privy, situated in a garden, if there is one, or, in its absence, in a yard or outbuilding, is of a type common in rural districts. The pit, usually of large size, is not even professedly water-tight; it is emptied as occasion requires, and its contents either buried near at hand or applied to land. In a few instances privies discharge directly over watercourses.

Drainage.—There is no system of drainage. Rubble drains on the high roads convey, in ordinary weather, storm-water and some slop-water to the watercourses; but many of these drains are more or less choked, and in time of heavy rain flooding of low-lying parts of the village not unfrequently results. House-slops are commonly thrown on the ground, or are got rid of through untrapped outside gratings communicating with surface drains, which lose themselves in the ground, join the rubble drains, or in other ways allow their contents to gain access to the watercourses.

Previous Health History.—It does not appear that Brailes has been continuously prone to epidemic disease, notwithstanding the abundance of dangerous conditions in the place. Certainly there is no record of diphtheria having previously attacked the village. Twice during the last twenty years scarlet fever has been fatally prevalent; on the last occasion, in 1870-71, causing no less than ten deaths in about six months. "Low fever," probably enteric, is the common fever of the district, but there has not been, it is said, any special prevalence of the disease in Brailes itself. In 1875 foot-and-mouth disease in cattle was rife here, as well as elsewhere in the neighbourhood, but during the present year no cases have come under the notice of the police authorities.

The Diphtheria.—The progress chronologically in Brailes of diphtheria is shown in Table I.

TABLE I.

Weeks.	Fresh cases in week.	Houses newly attacked.	Deaths in week.
Week ending May 6th ...	3	2	1
,, ,, 13th ...	1	—	1
,, ,, 20th ...	—	—	1
,, ,, 27th ...	1	1	—
,, June 3rd ...	—	—	—
,, ,, 10th ...	2	1	—
,, ,, 17th ...	4	4	—
,, ,, 24th ...	5	3	1
,, July 1st ...	5	2	5
,, ,, 8th ...	9	5	4
,, ,, 15th ...	3	2	2
,, ,, 22nd ...	6	3	2
,, ,, 29th ...	2	1	5
,, Aug. 5th ...	2	—	1
,, ,, 12th ...	5	1	—
Totals in 15 weeks	48	25	23

The main facts of the incidence of the diphtheria on Brailes, with the numbers respectively of families, persons, children under 15, and adults, are given in the following tables:—

TABLE II.

Locality.	Population.*				Attacked by diphtheria.				Deaths.		
	Families.	Persons.	Children under 15 years.	Adults.	Families.	Persons.	Children under 15 years.	Adults.	Families with fatal cases.	Children under 15 years.	Adults.
Lower Brailes ...	133	532	175	357	15	31	28	3	9	13	—
Upper Brailes ...	82	386	166	220	10	17	16	1	9	10	—
Rest of Parish ..	88	367	136	231	—	—	—	—	—	—	—
Totals	303	1,285	477	808	25	48	44	4	18	23	—

It thus appears that diphtheria has been wholly restricted to Brailes village, and that the incidence of the disease has been almost without exception upon children. The special and fatal incidence on children is illustrated in Table III.

TABLE III.

Locality.	Families.		Persons.		Children under 15.		Adults.		Deaths per cent. of total attacks.	Dths. of childn. per cent. of attacks of childn.
	Total.	Attacked per cent.	Total.	Attacked per cent.	Total.	Attacked per cent.	Total.	Attacked per cent.		
Lower Brailes ...	133	11·2	532	5·8	175	16·0	357	0·8	41·9	46·4
Upper Brailes ...	82	12·1	386	4·4	166	9·6	220	0·4	58·8	62·4
Whole village ...	215	11·6	918	5·2	341	12·9	577	0·6	47·9	52·2

Further, it appears that the incidence of the disease on children has been different at different periods of childhood, and that the fatality of the disease has varied according to the age of the patients, Table IV.

TABLE IV.

Village children.	At all ages under 15.	At 0—3.	At 3—6.	At 6—9.	At 9—12.	At 12—15.
Attacked by diphtheria ...	44	1	20	11	9	3
Died of diphtheria	23	1	13	6	3	0
Deaths per cent. of attacks ..	52·2	100	65·0	54·5	33·3	0·0

---

* The figures for Lower and Upper Brailes were obtained by house to house inquiry, made for the purpose of this report. Those for "rest of parish" are merely roughly estimated, and are probably in excess of the actual numbers.

There is here seen a special incidence of diphtheria on children above three years and under twelve years of age, and the question now arises to what extent this was an affair of mere age as affecting personal susceptibility, or was an affair of different exposure to the cause of diphtheria. It is requisite to consider this question in some detail, for, though the results will be negative, there will be advantage in indicating some of the sources of fallacy surrounding such inquiries. Age by itself can be supposed to have determined this special incidence on children in either of two ways : either through the circumstance of their seniors being protected by reason of having already passed through an attack of the disease, or through children having, by the mere circumstance of their being children, some greater proclivity to receive the infection of the disease. Now in the case of diphtheria there is no reason for believing that any notable degree of protection is given by an antecedent attack, and certainly at Brailes there had been for years no means of such a protection being acquired. The mere fact of childhood undoubtedly goes for something as predisposing to attack, especially to fatal attack, and the question is, What degree of influence ought to be assigned to the mere fact of age as determining attack ? This question is mixed up with the question of different opportunities of exposure in children and in their elders. Here are some of the facts bearing on these questions, and tending at first sight to suggest that the conditions of meeting at school had been concerned in the spread of the diphtheria.

There are in Brailes village 341 children under fifteen years of age, ranging themselves according to their attendance at schools and their suffering from diphtheria as follows :—

TABLE V. *a*.

Village children under 15.	Attending School.	Not attending school.
Attacked by diphtheria ...	37	7
Escaping diphtheria	195	102
Total children	232	109
Per cent. of attacks to total	15·9	6·4

TABLE V. *b*.

Village children under 15, attending	Boys' Free School.	Girls' and Infants' School.	Sunday School only.	Dame School.	Catholic School.	Chapel Sunday School only.
Attacked by diphtheria ...	4	20	3	0	9	1
Escaping diphtheria	38	77	30	13	17	20
Total attendants from village	42	97	33	13	26	21
Per cent. of attacks to totals	9·5	20·6	9·0	0	34·6	4·7

Here there is seen a more than double incidence upon school children compared with other children, and a very different incidence on the children attending one school as compared with those attending another.

Upon evidence of this kind (though not thus exactly formulated) it had come to be believed in Brailes (as it has on similar grounds been believed elsewhere) that the spread of diphtheria had been due, in the main, to the agency of schools. It appeared to me, however, that statistics of this sort took into account only imperfectly the question of age-susceptibility, while they were liable to conceal behind generalities the particular circumstances of individuals. I therefore went further into the matter, with the result, as will soon appear, of modifying the first impression derived from the foregoing statistics.

For it was soon seen that children at school and not at school were not truly comparable in regard of this very matter of age ; that very few of the 232 who went to school were under 3 or over 12, and very few of the 109 who stayed at home were so old as 3 or so young as 12. So that if, within the susceptible period of childhood, it were conceivable that the chief susceptibility was on ages between 3 and 12, there would appear a reason, wholly apart from actual school influence, for the above greater incidence of diphtheria on children attending school.

In order to get light on this point, I addressed my inquiry to the exact circumstances of the 25 families that were actually invaded by the disease, and found that information of one sort was to be gained from the conditions of the 25 first sufferers in their respective families, and information of another sort from the circumstances of the 131 other persons who made up the 25 families.

In inquiring about a disease that is admittedly able to spread (no matter in what degree) when it once obtains entrance to a family, it is seen that questions of causation apart from mere family influence can only be investigated by reference to the first cases in the respective families, and it is in this aspect that I studied with peculiar interest the circumstances of the 25 persons who first introduced the disease into their several households. By much questioning I made out the following :—

In these families there were—

16 infants under 3 ; one of whom attended school.
67 children between 3 and 12 ; 54 of whom attended school.
73 persons over 12 ; 4 of whom attended school.

Among those attending school, first cases of diphtheria occurred in 15 of the 54 aged between 3 and 12.

Among those not attending school, first cases of diphtheria occurred, in one infant out of 15 infants not attending school ; in 8 children out of the 13 children not attending school ; and in one person over 12 out of 69 persons over 12 who were not attending school. Here I reckon a person as being in attendance at school, if he was attending either at the moment of attack, or at any time during the week previous to attack.

So that, without considering the two first attacks on persons of other ages (their number is too small, but they tend to the same conclusion), it is found that diphtheria, when introduced into families by children between 3 and 12, was introduced proportionately more often by children who were not at school than by children who were at school. I do not read the difference as indicative of any greater safety in the circumstances of schools than in the other circumstances of life in Brailes ; for the fact of the schools being open at one time and closed at another during the epidemic is probably the reason of the above difference. But in view of these figures it can hardly, I think, be contended that school attendance had any of that influence in spreading diphtheria in the village that from the earlier statistics it may have seemed to have. Force is added to this conclusion by a fact that has not yet been mentioned. The schools of Brailes were attended by 31 children belonging to 15 families residing outside the village. Not one of these children fell ill with the disease.

The cases of after-occurrence of diphtheria in families into which the disease had once got introduced have been looked to for light on the difficult point of age-susceptibility. Here were 131 people living in the presence of diphtheria ; so far as the disease may have had its origin in the house, exposed to such influences as may there have caused the disease in the original sufferer ; so far as the disease is contagious, living in the same room, sleeping in the same, or at the farthest the next, room, but often in the very bed with the sick ; parents nursing their children, children tending babies—all under circumstances of exposure to the infection of the disease.

Among these 131 persons there occurred 23 subsequent cases of diphtheria, and here is afforded the most real measure of age-susceptibility that it has been possible to procure. Of numbers of persons living at various ages under these conditions at home and under village influences abroad—

15 were under 3 ; and none contracted the disease.
15 were between 3 and 6 ; and 6 of them contracted the disease.
12 ,, 6 and 9 ; and 5 ,, ,, ,,
17 ,, 9 and 12 ; and 6 ,, ,, ,,
13 ,, 12 and 15 ; and 3 ,, ,, ,,
59 were over 15 years old ; and 3 ,, ,, ,,

So that, under the circumstances of these households, the babies all escaped, and few of the grown-up people were attacked ; but some two-fifths of the children between 3 and 12 contracted the disease.

The incidence of disease on these particular years, 3-12, is thus seen to be a fact of the Brailes epidemic, apart from considerations of difference in exposure to infection or to influences special to schools.

The next question is, Whether the peculiar incidence at this period of life was due to predisposition of individuals at the age of childhood, other conditions for the production of the disease being alike—or whether, at the particular ages 3-12, there was really some (though it was not at school) influence operative that was nothing like so much operative at earlier and later ages ?

This question has been held in view throughout the investigation that has been made respecting the circumstances of origin of diphtheria in Brailes, and consideration has been given to methods of dissemination other than those already discussed. Much time has been thus spent, and details in abundance have been collected, but inasmuch as the total result is of a negative character, I do not propose to give here more than a mere outline of the stages of the general inquiry.

As to Origin.—In regard of two families first, and almost simultaneously, invaded, attempt was made to discover, in the circumstances of these earlier cases, relation to antecedent diphtheria, or to other infectious disease of man or of animals, but without success. No evidence was forthcoming as to the importation into Brailes of diphtheria or other infectious disease, and connection of these earlier cases with a solitary case of diphtheria at Tysoe (five miles distant) in January, or with a more recent outbreak of the disease ten miles off, at Loxley village, could not be established. As to conditions of a sort likely to foster disease in or about the dwellings in which these earlier cases occurred, no community of circumstances existed for the two dwellings, which, indeed, were situated in different parts of the village. One, like many other dwellings in the closely-built parts of Brailes, had certain faults of construction, notably it had neither back doors nor back windows ; moreover it was small, in view of the number of its inmates, and generally it needed cleansing and repair. The other, a comparatively new cottage, had no such defects. Defects of the above sort, though perhaps prejudicial to health, cannot, in the present state of our knowledge, be regarded as likely to have produced diphtheria. Examination of the facts of water supply, drainage, and privy accommodation of these two dwellings revealed nothing suggestive of a connection of these circumstances with the diphtheria.

As to Dissemination of the Diphtheria.—Herein attention was given to methods whereby infection is commonly distributed in a community, and inquiry in this sense extended to water supply, drainage, and privy accommodation, and also to certain articles of diet, for every house in the village. And, in regard to the 25 families invaded, minute investigation was made as to methods whereby infection might have been conveyed by persons from one house to another. Nothing definite, however, was made out. Circumstances of water supply, drainage, privy accommodation, or of diet were in no wise common to all these 25 families ; and if community of one or more of the above circumstances did exist for some of the 25 families, such circumstances equally involved many other families who were not attacked. In regard of a few families, it seemed that opportunity had existed, [owing to communication of the healthy with the sick, for contracting disease at one or other of the households already invaded ; but in regard of many no sort of explanation as to the method of invasion was obtainable.

Before leaving Brailes I conferred with the officers of the Shipston-on-Stour Sanitary Authority, and suggested such measures as seemed to be immediately called for in view of the prevalent diphtheria. These included systematic isolation and proper supervision of the sick in a temporary hospital ; disinfection of infected dwellings, clothing, and bedding ; and precautions against intercommunication of the sick with the healthy.

THE PRACTITIONER.

FEBRUARY, 1877.

Original Communications.

WARBURG'S TINCTURE.

BY W. H. BROADBENT, M.D.,

Physician to, and Lecturer on Medicine at, St. Mary's Hospital.

WARBURG'S tincture has long held a high reputation in India, as a remedy of undoubted and indeed unequalled power in the treatment of the malignant malarial fevers of that country and of cholera. Testimony to its efficacy has come from men whose capability and opportunities of forming an opinion could not be disputed, but until quite lately it was a secret remedy, and in this country we are not frequently brought face to face with the terrible emergencies in which its efficacy has been shown, and have not, therefore, been compelled to sacrifice our objections against the employment of an unknown agent to the safety and welfare of the patient.

My interest in Warburg's tincture had been excited by published statements and private testimony as to its value; when, therefore, Professor McLean made known its composition and mode of preparation in the *Medical Times and Gazette* for 1875, Vol. II. p. 540, giving his unqualified support to all that had been said in its favour, I made a careful study of it, with a view to ascertain the therapeutic principles on which its effects depended.

The following is the formula made known by Professor McLean:—

Aloes (Socotr.) libram ;
Rad. Rhei. (East India) ;
Sem. Angelicæ ;
a. Confect. Damocratis ; ana uncias quatuor.
Rad. Helenii (s. Enulæ) ;
Croci Sativi ;
Sem. Fœnicul.
b. Cret. Præparat ; ana uncias duas.
Rad. Gentianæ ;
Rad. Zedoariæ ;
Pip. Cubeb ;
Myrrh elect. ;
Camphor ;
c. Bolet. Laricis ; ana unciam.

The above ingredients are to be digested with 500 oz. proof spirit in a water-bath for twelve hours; then expressed and ten ounces of disulphate of quinine added; the mixture to be replaced into the water-bath till all the quinine be dissolved. The liquor when cool is to be filtered, and is then fit for use.

a. This confection, which consists of an immense variety of aromatic substances, was once officinal, and is to be found in the London Pharmacopœia, 1746.

b. Dr. Warburg states that this ingredient was added to correct the otherwise extremely acrid taste of the tincture. Many other substances were tried, but none answered so well as prepared chalk.

c. This is the Polyporus laricis (P. officinalis, Boletus purgans, or larch-agaric), "formerly," says Pereira, "used as a drastic purgative, and still kept by the herbalist."

The tincture is of a deep brown colour, has an aromatic and slightly terebinthinate odour, and an intensely bitter and warm aromatic taste ; a noteworthy point about it is that there is nothing spirituous in either taste or smell, and it seems as if the alcohol employed in its manufacture were entirely saturated, and so to speak extinguished, by the substances taken up. The tincture evaporates readily, leaving a copious brown residue.

"It will be seen," to employ Professor McLean's words, "that quinine is the most important ingredient in the formula, each ounce bottle containing nine grains and a half of the alkaloid. Its presence has been detected by every chemist who has attempted its analysis, and never doubted by any medical man of experience who has used the tincture. Many will say," continues Professor McLean—"'After all, this vaunted remedy is only quinine concealed in a farrago of inert substances for purposes of mystification.' To this objection my answer is—I have treated remittent fevers of every degree of severity, contracted in the jungles of the Deccan and Mysore, at the base of mountain ranges in India, on the Coromandel Coast, in the pestilential highlands of the northern division of the Madras Presidency, on the malarial rivers of China, and in men brought to Netley Hospital from the swamps of the Gold Coast, and I affirm that I have never seen quinine, when given alone, act in the manner characteristic of this tincture. And although I yield to no one in my high opinion of the inestimable value of quinine, I have never seen a single dose of it given alone, to the extent of nine grains and a half, suffice to arrest an exacerbation of remittent fever, much less prevent its recurrence, while nothing is more common than to see the same quantity of the alkaloid in Warburg's tincture bring about similar results."

I will give two illustrations of the effect of Warburg's tincture which have come under my observation.

The first is that of a gentleman, seen with me by Dr. Clarke, of Huddersfield, whose medical history is briefly as follows:—His father suffered much from gout, but lived to the age of eighty-four or eighty-five. He had himself had little illness of any kind, but at about the age of forty he suffered from vertigo, which for many months almost rendered him incapable of business. It was considered to be gouty, and he was forbidden to take beer, wine, spirits, sugar, or butter. For twenty or twenty-five years he obeyed this injunction strictly. At the age of about seventy he began to take a little wine occasionally, and after seventy-five he drank a single small glass of port almost daily. Early in 1876 he took cold and had bronchitis, and together with this a febrile condition, attended with severe pains in the limbs, which were worse at night. He was unable to sleep, had no appetite, vomited his food, suffered from constipation, and in consequence rapidly lost strength. At length, while taking small doses of iodide of potassium with ammonia, colchicum, and bark, given on the hypothesis that the pain was of gouty origin, he began to improve. On his eightieth birthday, which was in the second week of March, he was convalescing slowly, and was sitting up in his room for the second or third time; he was wishful to show, by walking without assistance, that he was not so helpless as he was made out to be by his family; he had miscalculated his strength, however, and over-balancing himself, fell backwards, striking his hip against the fender. The shock was so great that it was feared he would not be got back to bed alive, and its immediate effect will be understood from the fact that the secretion of urine was *suspended*[1] for twenty-four hours, and when it first began to be formed it was scanty, escaped involuntarily, and was ammoniacal. The pain in the injured hip was so great that complete examination was impracticable, and it was supposed for some time that there was intra-capsular fracture of the neck of the femur.

The shock of this accident brought back the old symptoms, pain, sleeplessness, restlessness, inability to take food, constipation, and vomiting. The patient was rendered so helpless by the pain in the hip, caused by the injury, and the pains in the limbs, together with weakness, that he was unable to turn in bed, and the lower extremities were for a time absolutely powerless, and had to be shifted for him. He rallied from the immediate effects of the fall, and having shown the constitutional vigour which this implied, it was hoped he would continue to improve. This, however, was not the case, the helplessness continued, and, worn out by pain, sleeplessness, and inability to take food, the strength rapidly failed, the desire for, and expectation of, recovery, which had hitherto been a great source of hope, ceased, and for the first time the mental faculties became impaired, and there were forgetfulness, wandering, hallucinations, &c.; the pulse was frequent and weak, and the tongue became dry. It was observed that there were febrile accessions, attended with flushing of the face, but not giving rise to any notable elevation of temperature, and the state of the case appeared to be that while the heart and vessels were wonderfully sound, the kidneys healthy, the nervous system vigorous, the strength was being worn out by suffering, sleeplessness, and fever. This was exactly the condition in which, as it seemed to us, Warburg's tincture might find its application, and, everything else having failed, it was resolved to make trial of it. This was Sunday, April 9th, but it was not till the following Thursday that the tincture could be procured, by which time it appeared too late for any remedial measures. During Thursday night the patient was wildly but feebly delirious; he had ceased to recognise the members of his family; there were general muscular tremor and jactitations, and all the signs of approaching death. Two doses of the tincture were given on Friday morning, but without any hope of good result, and I was summoned by telegraph. On my arrival in the afternoon, instead of finding the patient moribund or dead, as I feared, he was in a quiet sleep and bathed in a warm perspiration, while the whole room was fragrant with the aromatic constituents exhaled by the lungs and skin. The sleep continued for twenty-four hours, interrupted only by the administration of food, and he woke from it refreshed, free from pain, and quite clear in mind, though, of course, extremely weak. From this time there has been slow but continuous improvement, and the patient now eats and sleeps well, is free from pain, cheerful, and in the full enjoyment of his intellectual faculties, though he remains very helpless as regards muscular power, and appears indeed to have had spinal meningitis, as there is some degree of wasting and contraction of the limbs. One good effect of the tincture, which he has taken in small doses ever since, has been its mild but efficient aperient action on the bowels.

---

[1] It may be well to state that it was not mere retention of urine, but actual suspension of secretion.

A second case, in which it appeared to me that Warburg's tincture certainly saved life, was that of a boy of six, in whom scarlet fever was accompanied by extreme frequency of pulse, and especially of respiration. A favourable opinion as to his chances of recovery was entertained, notwithstanding a pulse of 160 to 180, and respirations 60 per minute, chiefly because his aspect was good and the mind fairly clear, the beats of the pulse also remaining distinct, till the morning of the seventh day, when the pulse was not only more frequent than ever, but the beats ran into each other, and the boy was scarcely conscious. On the evening of this day the aspect of the boy was still worse, and indeed hopeless. Warburg was now given; the first dose was vomited, but a second was retained. Next morning, though he had a death-like pallor and the pulse was scarcely perceptible, the beats were distinct. The stomach rejected everything, and the Warburg was given by the rectum with beef-tea and brandy, and in spite of complications the boy recovered.

My chief purpose in this communication, however, is not to extol Warburg's tincture. Nothing, indeed, that I could say would add weight to the testimony of Professor McLean. I have sought, as is my habit, by study of an undoubted therapeutical fact, to arrive at the principles on which the effects are produced, and if possible to ascertain the mode of action of the remedy.

As will have been seen at once, even without the remarks quoted from Professor McLean, the main ingredient is quinine, and one great principle of its action is the combination of quinine with powerful aromatics. It is aperient also from the aloes, rhubarb, &c., contained in it, and this may contribute to its usefulness, though in a minor degree only. It is a fact with which physicians are perfectly familiar, that the action of quinine is often aided by stimulant and aromatic adjuvants—the compound tincture of bark is testimony to this; perhaps the advantages of the combination have not been borne in mind in the same degree when large doses of quinine have been given for the purpose of reducing pyrexia or restoring power in adynamic conditions, as some forms of pneumonia. A large dose of quinine sometimes not only gives rise to the usual symptoms of cinchonism, but produces great prostration, and I have distinctly seen harm result. It appears to me probable that this can be counteracted by aromatic stimulants, and after the experience with Warburg which I have just related, I tried, in a case of extreme prostration at the end of a relapse of enteric fever, large doses of the liquid extract of cinchona and of ether combined. The boy could scarcely have been more pale had he been dead; the temperature was only slightly raised; he was pulseless and unconscious, and did not rally at all when stimulants were given. He began to improve as soon as the bark and ether were given, and eventually recovered. I think a large dose of quinine alone would have killed the boy, and that the ether alone would have failed to raise him.

A combination I have long employed in giving large doses of quinine is with very strong black coffee and brandy.

But there is a second therapeutical principle, of which advantage is taken in the employment of Warburg's tincture—this is *concentration.* The maxim is as old as Hippocrates: Ἐς δὲ τὰ *ἔσχατα νουσήματα, αἱ ἔσχαται θεραπεῖαι ἐς ἀκριβείην κράτισαι.* Ad extremos morbos, extrema remedia exquisite optima (Aphorism vi.). We hear much of the physiological administration of drugs, by which is usually meant the exhibition of small and frequent doses, though no doubt it was really intended by the framers of the phrase to indicate the giving of a remedy in such doses and at such intervals as are indicated by its energy of action, rate of elimination, &c. But there is a *therapeutical administration* of drugs, to which physiological experiment affords no clue, and for which the condition of the patient is the indication.

In *post-partum* hæmorrhage a drachm of laudanum will rally the exhausted strength, restore consciousness, rouse the uterus to action, and arrest the bleeding when six times ten minims in water would allow the patient to bleed to death. In syncope a tablespoonful of undiluted brandy will have an effect which twice the quantity drowned in water would fail to produce. We defeat a paroxysm of ague and cut short the disease, or suppress neuralgia, by a single large dose of quinine, when repeated doses of average amount have entirely failed.

The instructions given with Warburg are that the bowels shall have been freely open, that no food shall have been recently taken, and that two doses shall be administered without dilution at an interval of two or three hours, nothing being taken between but a little brandy or beef-tea, and this only if required by the state of the patient. The remedy thus enters the empty stomach in a highly concentrated state, and is no doubt rapidly absorbed. Its remarkable effects are distinctly due to the powerful impression made upon the nervous system.

I may call to mind other examples of striking curative effects due to an impression on the nervous system, and it is worthy of remark, how little specific this impression may be, provided only that it is energetic. It is a well-known fact, that strong spirit of camphor, taken on a piece of sugar, will often arrest severe and dangerous diarrhœa, especially in children, sometimes, indeed, when other remedies have failed. Cajuput oil, and probably other essential oils, will sometimes have the same effect. Now what is the condition of success, and what the order of phenomena observed? There is a sense of heat, almost of burning, in the mouth, throat, and stomach; to this succeeds excitement of the pulse; a glow of warmth throughout the system and over the surface, flushing of the face, and often perspiration. Let these effects be produced almost by whatever means, and the desired result usually follows. I have been assured by competent observers that the premonitory diarrhœa of cholera, and even the declared disease at the outset, can be cut short by a combination of strong stimulants, such as ammonia, ether, spirit of lavender, and tincture of capsicum. "You must bring tears into the eyes," said one of my informants.

I have already mentioned the employment of quinine in large doses in intermittent and remittent fevers. Its remarkable influence on the temperature is another illustration of what I have spoken of as the therapeutical administration of a remedy. A single dose of 20 grains will often bring down the temperature in enteric fever from 105° to 100°, or lower, and keep it thereabouts sometimes for twenty-four or thirty-six hours, whereas the same amount distributed over the twenty-four hours would have little appreciable influence.

The effect of salicylic acid again in acute rheumatism appears to depend greatly on the way in which it is employed. I have yet to see the case of genuine acute rheumatism without complication in which the pain is not entirely gone, and the temperature normal, after six consecutive doses of 20 grains, at intervals of an hour, on two successive days.

I may perhaps be permitted to mention a more modest application of the therapeutic principle of following up an effect, so as to make a decided impression, not for a moment comparable to those just described, but useful in its place.

A well-known treatment of catarrh, or of the early stage of bronchitis, is to give acetate or citrate of ammonia with perhaps free ammonia, vinum ipecacuanhæ, spirit of nitrous ether or of chloroform, and some preparation of opium. One can only give a certain amount of such a mixture at a dose, but by giving a series of doses, say at eight, nine, and ten P.M., instead of every three or four hours, we may often cut short an attack which would otherwise go on for days. I have occasionally seen striking instances of prompt relief, especially in the case of patients in whom catarrh was accompanied by asthmatic dyspnœa, tincture of belladonna being then added.

One more illustration may be given. It is common in fever, whether enteric or typhus, to have as a complication tympanitis, which may be quite independent of peritonitis or perforation of the bowel. The treatment I have found most useful in relieving this condition is opium. Occasionally the distension of the intestine comes on very suddenly, when it is not only a source of distress and danger, but carries very grave prognostic import. My interpretation of the phenomenon is that it is one of the manifestations of nervous shock, and that it indicates paralysis of the sympathetic system, with consequent loss of tone in the muscular wall of the bowel allowing the distension to take place. It constitutes one of the emergencies to which the Hippocratic maxim applies, and under such circumstances I do not hesitate to give and repeat a drachm of tincture of opium. I can recall to mind many instances in which by this treatment the tympanitis has been dissipated in a few hours, with a corresponding improvement in the general condition of the patient.

I desire in conclusion to give the discussion another turn. It will have been obvious that the opportunity for the display of the curative powers of Warburg's tincture—and when I name this I do so as representing a combination of quinine with powerful aromatic stimulants of proved efficacy—is found in conditions in which there is no organic disease necessarily fatal, and no local inflammation adequate to the production of the symptoms, but the nervous system is overwhelmed by some poison, as in malignant remittents, or oppressed by pyrexia, or sinking under some depressing influence.

Now there are various ways in which the nervous system shows that it is overborne and mastered by disease—I do not speak now of disease of the nervous centres themselves—and nothing can be more important than a knowledge of the means, if means there be, of meeting each particular manifestation. It is directly to combat the tendency to death. I have been encouraged in my endeavour to call attention to these signs that the nervous system hauls down its flag in token of defeat, by some observations in one of the clinical lectures of the late Dr. P. M. Latham, which attracted my attention while I was in search of another passage germane to this subject, which made a deep impression on my mind many years ago. "I am persuaded," says this great physician, "that when the physician is called upon to perform great things, even to arrest destructive disease and to save life, his skill in wielding the implements of his art rests mainly upon the right understanding of simple and single indications, and of the remedies which have power to fulfill them," or, as it is put in the table of contents, "the groundwork of rational practice is to understand the value of single indications, and the power of single remedies." I have already mentioned, in the course of this communication, most of the indications of failing nerve power. One is hyperpyrexia, most commonly seen in acute rheumatism, but met with also in enteric fever, scarlet fever, &c., after ovariotomy, after severe injuries to the brain, and in the last stage of some diseases of the brain. My interpretation of this phenomenon is that the nervous system abdicates its office of control over the temperature. The circulation of blood, charged with oxygen, through the tissues, were the oxidation not controlled, would lead to evolution of heat far beyond what is required for the maintenance of the normal temperature of the body, and the influence which moderates the reaction between blood and tissues can be derived only from the nervous system. Let this be withdrawn, and hyperpyrexia follows, which of course again reacts, with fatal effects, on the nervous and muscular systems. The occurrence of hyperpyrexia as a result of injury to the head is the most direct illustration of its dependence on the nervous system, but this dependence can be traced in the circumstances by which it may be induced during the course of enteric fever or acute rheumatism, as when it sets in suddenly after a powerful emotion or after loss of rest caused by some local pain. Dr. Wilson Fox has shown us how hyperpyrexia is to be met, *i.e.* by the cold bath; and was the first to recall a patient to life from a temperature of 110 ° F., and Dr. Routh has successfully treated hyperpyrexia after abdominal section by this method; I think it may be the means of saving life after injuries to the head.

A second indication of a serious and dangerous impression made upon the nervous system by disease, is extreme frequency of pulse. The late Dr. Latham speaks somewhere of the over-frequent pulse as the pendulum which tells how fast the clock is running down. Sometimes it precedes by many hours, as in abdominal collapse, all other intimations of danger, or tells us at the outset, say, of an attack of scarlet or puerperal fever, that we have to deal with a most serious case. I take it that here again the nervous system, staggered by the blow, loses control over the heart. The variety of conditions under which this indication occurs will not permit me to say that there is any one way of meeting it, and the discussion of various methods would lead me too far.

There is another indication of serious collapse of the nervous system which is much less common, extreme frequency of respiration, not accounted for by any disease of heart or lungs. I believe it sometimes complicates acute attacks of pneumonia or carditis, and that rapid breathing in these cases does not always depend on disturbance of the relation of capacity between the heart and lungs; but I did not recognise this till I had seen examples in which there was no affection of these organs. One of these I will relate. It was in the case of a gentleman, aged about 45, of most magnificent physical conformation. He had, however, from early youth given unrestrained indulgence to all his appetites, had committed great sexual excesses, ate enormously, and for many years drank on an average six bottles of wine, claret, hock, or champagne, per day. When I first saw him he was suffering from ascites and acute congestion of the liver; next day he had delirium tremens, and in the first twenty-four hours of this he eluded his attendant, fell down stairs and broke his arm. He recovered from all these, and regained a fair degree of health. For a time he submitted to restrictions on his food and drink, and while he did this he remained wonderfully well, and was apparently as strong, muscularly, as ever. He could however no longer go to excess without suffering in some way or other. Before I saw him he had had two or three severe epileptiform seizures, and twice after the ascites, at intervals of nearly a year, he had attacks of epileptic mania after indulgence in alcohol. I have never seen more furious and dangerous violence than he exhibited. Until the first of these attacks he had been sufficiently well to drive regularly one of the coaches out of London, and he continued this amusement occasionally, even after the second, but he was now no longer the same man. He was less inclined to take exercise, and his walk had not its spring; in the saddle "he sat all in a heap," his spirits were unequal, and he became nervous and anxious. The effects of the liver disease, of which the congestion had been an early sign, gradually developed themselves; his complexion assumed a peculiar dark sallow hue, which on exposure to cold deepened, in the course of an hour or less, almost to a coffee-brown tint; purpuric patches appeared from time to time on the legs, and these were occasionally adematous. All this time the appetite was good, the bowels regular, the pulse normal, but it was obvious that the patient was in a state of most unstable equilibrium, and that a touch would over-turn the balance. This came from two long coach-drives, twenty or thirty miles each, on cold days in May. A catarrh resulted, which was at first slight, and presented nothing remarkable; the temperature was 102°. It was, however, certain that a constitution in the condition described would not endure even moderate fever, and that danger would arise. The first, and for some days the only, indication of this was the increasing frequency of respiration, which soon rose to the rate of sixty per minute. The most careful examinations, made over and over again, failed to detect signs of cardiac or pulmonary affection; the heart-sounds were absolutely normal; the pulse regular, large, full, soft, of average strength, and very slightly accelerated. The lung resonance was normal, the entry of air into all parts of the lungs perfect, the respiratory sounds simply those of exaggerated breathing. No cough, no expectoration, no sense of oppression or distress for want of air; no marked rise of temperature, urine high coloured, of high sp. gr., containing neither bile, sugar, nor albumen. After three or four days, some confusion of the mind become apparent; this rapidly increased, and with it came somnolence, which at the end of six days had deepened into coma. Convulsions now came on at short intervals, and a day later he died. From first to last nothing seemed to have the slightest influence on the condition till he was bled. This was opposed by my colleague in the case, and rejected by the family, till they were terrified by the convulsions. I proposed to take at least 16 oz. of blood, but found we had only got 12. I believe we ought to have taken 30 oz. There were no convulsions after the venesection, and there were but uncertain indications of partial return of consciousness.

The only remaining phenomenon indicative of failing nerve-power, which I wish to mention is tympanitis, and of this, and of its treatment by opium, I have already spoken at sufficient length.

SCIATICA.

BY THOMAS BUZZARD, M.D.,

Physician to the National Hospital for the Paralysed and Epileptic.

THE term "sciatica" is very widely applied. It may designate, first, and perhaps most properly, paroxysmal pains in the course of the sciatic nerves, for which no immediate cause can be discerned. Secondly, pains of a like description, which depend upon some cause of irritation applied to the trunk of the nerve itself, as, at all events, one factor in their production. Thirdly, pains in or about the muscles, and having only an indirect relation to a particular nerve-supply.

In considering the therapeutics of sciatica, it may be useful to glance at the characteristics of these three classes of disorder, for otherwise some confusion may arise, and remedies may run the risk of falling into disrepute because they have been applied and found wanting in inappropriate cases. I suppose it may be taken as at least probable that in the first two classes there is always some kind of pathological change, passing or permanent, in a nervous centre. The theory of the late Dr. Anstie was that there was an atrophic condition, not usually inflammatory in character, of the posterior roots of the spinal nerves in which the pain was felt. He thought too that a *neuritis migrans* with centripetal tendency would explain the action of a peripheral source of irritation, when such existed, in bringing about this state of atrophy. In this way he endeavoured, and I think with success, to explain what otherwise is full of obscurity—the occurrence, namely, of a similar train of symptoms in two persons, in one of whom neuralgia appears in an apparently spontaneous manner, and in the other where it manifestly follows, and seems to be occasioned by, a traumatic or other lesion of the nerve-trunk. I do not think, however, that this theory will be found to cover the whole ground, for, amongst other things, as Benedikt points out, Charcot and Bouchard found the posterior nerve-roots intact in the autopsy of a case of tabes in which the quasi-neuralgic pains characteristic of the disorder had existed for years. The lesion may, therefore, it must be supposed, sometimes be higher. Wherever the exact seat may be, it seems likely that some central change in the direction of impaired nutrition, and consequent abnormal instability of grey matter, may occur either without antecedent lesion, in any part of the nerve-trunk, or be brought about by an influence which extends upwards from the periphery. We can hardly otherwise explain the fact that wounds, growths, and other sources of irritation in the distribution of a nerve sometimes occasion pains which are indistinguishable in character from those we are accustomed to rank as distinctly neuralgic, and find occurring in cases where no kind of peripheral irritation can be discovered.

Before directing a glance at the anatomy of the sciatic region, I would remark upon the great frequency with which some form of lumbago is found to precede an attack of sciatica. It seems to me, from my experience, that it is more common than not for such a succession to be observed. In some cases years may elapse between the attacks, but much more frequently it is a question of a few days or weeks. An association of a somewhat similar kind is met with in the case of cervico-brachial neuralgia, which is very often indeed preceded by neuralgia of the great occipital. It would seem that lumbago (when it is of neuralgic character, which is by no means usually the case), is an affection especially of the last lumbar nerve, which gives off the lumbo-sacral nerve, the great communicating branch between the lumbar and sacral plexus, a dependence, in fact, of the sacral plexus. Now the sciatic nerves may be considered as a prolongation of the sacral plexus into the lower extremity. Hence, probably, the reason for this association.

The *great sciatic* nerve, it will be remembered, supplies the muscles of the posterior region of the thigh and of the whole leg and foot. It innervates the greater part of the skin below the knee—the long saphenus branch of the anterior crural being distributed to the internal aspect of the leg.

The *small sciatic* nerve supplies one muscle, the glutæus maximus, and sends besides cutaneous branches upwards over the buttock, downwards to the skin at the back of the thigh, as well as a branch which runs in the groin between the perineum and thigh, giving twigs to both, and becoming lost on the external genital organs.

The cutaneous surface, therefore, to which, in accordance with the laws of the reference of sensation, pain may be referred in sciatic neuralgia, is a very large one. It rarely, perhaps never, happens, however, that all parts of this district are coincidently or equally affected. Whilst in some cases but few branches appear to escape, in others pain may be described as entirely limited to comparatively small spaces, corresponding with some part of the terminal distribution of the external or internal popliteal branches, for instance, or even, but less commonly, of one or other of the plantar nerves alone.

I do not know that as regards the essential symptoms any clear line can be drawn between cases of what perhaps one may term sciatica proper—*i.e.* the affection for which no external cause can be found—and those cases of sciatica which I have massed in Class II. as having for one factor a peripheral source of irritation, either discerned or diagnosed. In either class the pain is liable to be exceedingly severe, as might indeed be expected from such an affection, involving the largest nerve in the body. Its character is described by different patients, and under various circumstances, as shooting, darting, screwing, tingling, or burning; and the sufferer will often map out with precision the course of various branches of the nerve as the seat of his distress. As is characteristic of neuralgia generally, the pain may be apparently spontaneous in origin, whilst in certain cases it is also liable to be aggravated by movement, but in no case is it *only* excited when muscular contraction takes place. It may either occur in paroxysms, with intervals of complete immunity, varying in length from minutes to hours, or there may be more or less continuous suffering with frequent and violent exacerbations. The disorder is not accompanied by pyrexia. When the pain is at its height a powerlessness of the muscles of the limbs is apt to be experienced, and this not on account of pain provoked by muscular movement, but from an actual paresis dependent upon a depressing influence communicated to motor centres. From a like cause affecting vaso-motor centres the limb will feel cold not only subjectively, but to the touch another.

At certain parts of the limb somewhat hard pressure with the finger will cause a feeling of tenderness. Points of this kind—the *points douloureux* of Valleix—may be met with in all, but far more frequently in some few only, of the following situations:—posterior inferior spine of ilium; about midway between the tuberosity of the ischium and the trochanter major, but nearer the former; just where the cutaneous branches of the small sciatic nerve turn upwards over the glutæus maximus muscle; near the head of the fibula; behind each malleolus; in the popliteal space. It is to be remarked that these spots are seats of tenderness, but are not themselves especially the foci of spontaneous darts of pain.

It is common to find some amount of *cutaneous anæsthesia* in the course of distribution of the nerve. On the dorsum of the foot I have seen the district innervated by the peroneal nerve mapped out with great distinctness in this way. *Herpes* is, I think, of rare occurrence in sciatica; but in a case which I have under observation of characteristic neuralgic pains in the prodormal stage of tabes, a patch of herpes invariably accompanies, usually following, but sometimes preceding, the pains. The eruption is always in one place—in the district of the ascending cutaneous branch of the small sciatic nerve. This, however, cannot properly be classed with cases of neuralgia proper.

Feelings of weight, numbness, and tingling in the leg and foot are very constant. Sometimes accompanying, and at other times replacing the anæsthesia, there will be found patches of skin which appear to be highly *hyperæsthetic*. Examination shows, however, that the tactile sense proper is actually lowered at these points. Not so, however, the sense of temperature, at least for heat, which is appreciably heightened. A patient standing with his back to the fire, and separating his coat-tails *more Britanno*, will find a temperature unbearable on the affected side which is felt as grateful warmth only at the back of the sound limb. At the same places a weak voltaic current will often be found to cause acute pain, whilst in other parts of the limb its application would be scarcely noticed. Cramp of the calf muscles is very common.

Amongst predisposing causes of sciatica which require to be remembered in reference to the question of therapeutics are: arterial degeneration, anæmia, the rheumatic and the gouty diathesis, the toxic influence of malaria, chronic alcoholism, syphilis, lead, and the inherited neurotic disposition.

As immediately exciting causes, the most potent of all (apart from irritations produced by wounds and destruction of tissue caused by growths) are fatigue and the influence of cold. A medical friend attributes his attack to his constantly alighting from a high gig upon the same foot. The affection often follows an unusual strain in walking great distances. The influence of cold, and especially damp cold, in starting or prolonging an attack does not need to be dwelt upon. Concussion of the spine may induce well-marked sciatic neuralgia.

The following seem to be amongst the most usual causes of peripheral irritation:—malignant and other tumours of the pelvis, disease of the vertebræ or pelvic bones, the pressure of the gravid uterus, rheumatic or gouty inflammation of the sheath of the sciatic nerve, or of one or other of its branches, syphilitic periostitis, causing a swelling which presses upon the trunk or some branch of the sciatic nerve.

There is a form of sciatica of peculiar intractability which is not generally described, I think, in works upon the subject. It precedes or accompanies chronic osteo-arthritis (*arthritis deformans*) of the hip-joint, and the sciatic nerve may sometimes be felt to have hard, knotty swellings in it. It would seem to offer an example of *chronic* neuritis,—malignant tumours encroaching upon and involving the nervous plexus, giving rise, perhaps, to *acute* neuritis. But we do not know much about the relation of neuritis to neuralgia. It is curious that in sciatica from these last causes (permanent as are the lesions) there are yet, as in the disorder of purely central origin, marked fluctuations in the severity of the pain. I have often seen sciatica, dependent on pelvic cancer, imitate closely the more common disorder in the paroxysmal character of its pains and intermissions. This circumstance indicates the necessity of repeating from time to time a careful examination, of the region, when early search has failed to find evidence of tumour. The diagnosis is often difficult enough with this precaution, but without it there is constant liability to error. Lastly, sciatica, when it involves great powerlessness of the limb, is more often mistaken for some obscure form of spinal paralysis than some of my readers would imagine.

The last of the three very broad classes into which I have ventured to distribute cases of disorder to which the term sciatica is conventionally given, is one which it is very important, for therapeutical reasons, to separate from the other two. It includes the following conditions :—

a. Myalgia, from over-exertion of the flexor muscles at the back of the thigh. The pain is situated especially at the points of attachment of the muscles, and is only felt when the muscles are in action.

b. Muscular rheumatism in the same muscles, or in those of the leg, from exposure to cold. Here again the pain is not spontaneous as in sciatic neuralgia, but is only provoked by movement.

c. An irritated, perhaps low inflammatory, state of the loose bursal tissue, which intervenes between the muscles and permits of one sliding easily upon another. These are now recognised as lymphatic spaces, and are doubtless liable, as are the glands, to inflammation from the introduction into them of morbid material taken up by the lymphatic vessels. I owe to Dr. Burdon-Sanderson the suggestion of this possible cause of pain in the region of muscles. A case which I have had lately under treatment of what would perhaps be called gonorrhœal rheumatism seems to me to afford incidentally strong corroboration of this view. The symptoms embraced acute pain, tenderness on pressure, and remarkable muscular powerlessness, at first in one forearm, then in the scapular muscles especially, but not exclusively, of one side, later in the region of the *latissimus dorsi* of the opposite side. The pain only occurred on motion. Its situation, however, and the powerlessness of the arms had given rise to a suspicion of spinal meningitis. The affection of each district subsided after a few days without leading to suppuration. The patient was suffering from gonorrhœa, the discharge of which would subside at times and then recur. The muscular attacks coincided with the recurrences of the discharge. I am inclined to think that the connection of sciatica with gonorrhœa, which has often been noted and variously explained, may be best interpreted in this way. Probably it is not a sciatic neuralgia at all, but an inflammatory state of the lymphatic spaces in the sciatic region, induced as it was in my patient. We may thus also without difficulty explain the nature of a large number of those cases of lumbago which are clearly not of neuralgic character, the origin of which has been hitherto puzzling, and which, as is well known, are cured by purgatives. Such cases are apt to occur in persons who have been indulging in good living, whose excretory organs are working imperfectly, so that irritating material, uric acid or some equivalent, is retained in the system. This being carried into the lymphatic spaces between the muscles of the loins, sets up a low inflammatory condition. It often happens that the lumbago of this kind is followed by sciatica which is curable by the same measures. Perhaps, too, in this manner, rather than in the removal of scybalæ, may be explained the not unfrequent cure of so-called sciatica by purging.

We have glided insensibly, but not inconveniently, into the question of treatment. Referring to the preceding lines, it would seem that in a supposed case of sciatica we must discover first whether the case is one of neuralgia, next, if it be so, whether the neuralgia be immediately or only secondarily of central origin. If the former, we must attack with suitable treatment conditions of system which show defects; if the latter, we must seek by careful examination for the source of peripheral irritation. Where this is incurable, as, *e.g.*, in the case of malignant growths, we must employ palliatives for the relief of suffering; where, as for instance in the case of syphilitic new formations, it is removable, we shall of course use the appropriate remedies, iodide of potassium or mercury. The myalgic cases, on the other hand, will need remedies adapted to their particular character,—purgatives, as I have already said, and especially mercurial purgatives having exceeding value in the class depending upon irritation of lymphatic spaces by retained excretory matter. Muscular rheumatism may often be cured by induction currents applied to the skin by the wire brush, or by sponging the part with a negative rheophore of a constant-current battery, whilst the positive rheophore is kept applied to the skin. I do not propose to go further into details of systemic and specific treatment, but a few words respecting three methods especially directed to the relief of pain may perhaps be excused. In almost every case of sciatic neuralgia treatment of this kind will be a necessary complement of that directed to the probable cause of the disorder.

Of the three methods, none of which present novelty, hypodermic injections of morphia doubtless hold the first place. For my own part, I prefer employing very moderate doses, beginning with gr. $\frac{3}{30}$, and rarely finding it necessary, except in malignant disease, to exceed gr. $\frac{8}{30}$, a dose which is only arrived at by degrees. The solution I employ contains gr. i. in ♏ xxx., which is much more convenient than the pharmacopœial strength for giving small doses, and appears to me to be more active in proportion than the more concentrated form. The side of the buttock is a convenient place for the injection, which should be repeated, I think, as the effect begins to wear off. In very severe cases twice in the twenty-four hours is usually sufficient; when the disorder is less acute once a day is often enough.

Flying blisters in my experience are frequently of extreme service. They need not be larger than a five-shilling piece, and one should succeed another as it heals, not on the same, but on a closely adjoining part of the skin. In this way the posterior part of the thigh may, if necessary, be gradually traversed from above downwards. They may even be usefully employed as palliatives in cases not admitting of cure. A poor woman with agonising sciatic neuralgia from pelvic cancer found longer lasting relief from this treatment than from any other which I adopted.

The electrical treatment of sciatica is deserving of much more systematic and carefully-directed application than it has hitherto received in this country, except at the hands of a comparatively small number of medical men who have especially studied the subject. As I have already said, *induction currents* may be advantageously applied in those cases in which the affection depends upon muscular rheumatism. In cases of neuralgia, however, and especially in that class which is attended by local inflammation in the sheath of the nerve, I have found this form of electricity not only serve no useful purpose, but sometimes even apparently increase the symptoms. It seems necessary to say this distinctly, because, even at the present day, the notion of electrical treatment is limited in the minds of some to the application of magneto-induced currents from a rotary machine. I must admit that great good has been reported as having followed such applications, but I have seen nothing but disadvantage from them in cases which were of strictly neuralgic character.

The *constant voltaic current,* on the other hand, may be employed in this class, not only with results which are often strikingly palliative of suffering, but which are also sometimes curative, it may be rapidly, but more frequently after a considerable number of applications.

In what description of case is this mode of treatment indicated ? The question is one which, I regret to say, the materials hitherto collected do not enable us to answer with confidence. And the difficulty is largely dependent upon that confusion in the application of the term sciatica which this communication seeks to diminish. Cases dependent upon muscular rheumatism have been cured by electricity ; cases of malignant disease have received no benefit; syphilitic affections of the nerve have been absolutely unaffected by it,—a variety, therefore, it is probable, of totally different ailments have been treated under one name. My own personal experience of electrical treatment has not been large, for the remedy is one which it has often been useless to prescribe, as the prescription stood no chance of being carried out, owing to the absence of materials. But I have now used it, in hospital and private practice, sufficiently often to entertain a strong opinion that the application of the constant current ought not to be omitted in any instance of sciatic neuralgia which does not readily respond to any systemic treatment which may be indicated by the special circumstances of the case, coupled with hypodermic injections of morphia. I believe the application to be perhaps most hopeful in cases of sciatic neuralgia which are not dependent upon obvious sources of peripheral irritation ; but this should not exclude its employment in the latter class, in which (except perhaps when there is malignant disease) it may often prove of great service.

Details of application.—Any good constant-current battery may be employed—Dr. Tibbits' arrangement of the Leclanché, and Dr. Stöhrer's modification of the Bunsen, are probably the best for medical purposes,—and it will be necessary to use a current which proceeds from a tolerably large number of cells, say from about twenty to forty. The full strength of the current to be employed should be arrived at, however, step by step, to avoid the shock of its sudden application. Somewhat large sponge rheophores should be attached to the conducting wires, and thoroughly saturated with warm salt and water.

The object of the application, it must be remembered, is to expose the sciatic nerve to the continuous action of a current which is, as far as possible, of uniform strength, for a period of about ten or fifteen minutes. To avoid shocks during the application, neither rheophore should be lifted from the skin, and when the "sitting" is finished, the strength of the current should be gradually reduced to zero ere the circuit is broken by the removal of a rheophore. Any interruption of the current will cause a shock, and this it is very desirable to avoid in neuralgia. The strength of the current, when the full number of cells is gradually arrived at, should be as much as the patient can bear without much inconvenience,—it should be very distinctly felt, however.

There are three modes of applying the constant current in sciatic neuralgia.

1. The rheophore connected with the *positive* terminal of the battery is pressed against the upper part of the sacrum on the affected side, whilst the other rheophore is either attached to the patient's ankle, or put into a tub of salt and water, in which he places his foot. A very convenient mode is that which I have drawn in Fig. 1, where a sponge rheophore (S) is provided with a tape and buckle, by which it is easily and firmly applied to the leg. R is the upper rheophore, and B the battery. From it, when the circuit is completed, the electric current proceeds to R, and entering the body, spreads out on all sides, to be again collected at S and return to the battery. The tissues being conductors of electricity, the electric equilibrium of the whole body

will be disturbed, and stream-curves will occupy every portion of it. But the current-strength will be greatest where the resistance is least, which will be, *cæteris paribus,* in the shortest road between the two rheophores, and in this way the influence of the current is roughly localised about the sciatic nerve and its surroundings.

2. Two sponge rheophores are applied firmly, at a distance of three or four inches apart, to the posterior and upper part of the thigh, and, that distance being preserved between them, they are made to slide slowly down, following the track of the nerve. The current employed in this way is much denser than in the previous method, and a smaller number of cells will therefore have to be employed. In Fig. 2 this increase of density is represented by a greater thickness of the curves which connect the rheophores.[1] In a very good conductor, like a copper wire, the density of the current increases as the cross section of the conductor diminishes, but in animal tissues, which offer much resistance, this does not obtain, and the density varies inversely as the length of the conductor. The increased density in this mode of application is attended with great stimulation.

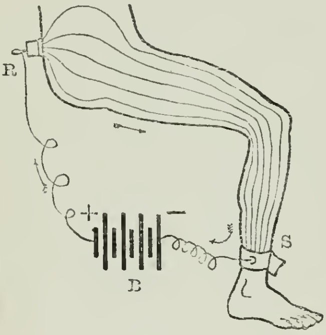


FIG. 1.

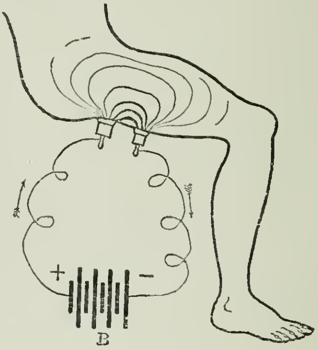


FIG. 2.

3. The *negative* rheophore is applied to the upper part of the sacrum, and the positive rheophore is slid along the lower extremity, lingering for a few minutes at each focus of pain.

---

[1] I am indebted to Fick's *Medicinische Physik* for the idea of this mode of representation, but for its application to the subject under consideration I am myself responsible.

Which is the best method of application? I am unable to say. Theoretically, perhaps No. 2 ought to be. When a constant current is sent into a nerve, as it is in the diagram, it develops what is called an "electro-tonic current" beyond the rheophores (not between them), and the irritability of the nerve is modified in a peculiar manner. That portion which is in the neighbourhood of the positive pole (the uppermost in our diagram) experiences a marked loss of irritability, whilst that which adjoins the negative pole has its irritability increased. As we wish to diminish the irritability of the sciatic nerve at its origin, the proceeding described would appear to be most likely to effect the object. Practically, however, the relative position of the poles, and the direction of the current therefore, is not found to make the difference which might have been expected, and it is certain that pain may be allayed in the same person by a current which does not always take the same direction.[1] As regards the duration and frequency of the applications, it is generally found that from ten to fifteen minutes is sufficient. The sitting should be repeated daily, or even more than once daily. In some cases great relief immediately follows; in others it never occurs. Cure may take place very soon, or prolonged treatment may be required; and, according to my experience, it is impossible to form any idea beforehand, in a given case, whether, or to what extent, it will prove amenable to this mode of treatment.

If the constant current be employed with the object of testing its efficacy, all other treatment should of course be omitted, but as our business in life is probably quite as much to relieve suffering without loss of time as to advance science, we shall do well as a rule not to omit the hypodermic use of morphia, the employment of rest, and of any systemic treatment which may be indicated, whilst the very potent influence of the current is added to these measures of relief.

---

[1] There is a point which may possibly be found to have importance for diagnostic purposes, and therefore may well be tested by those employing the current. Eulenburg says he has repeatedly found that, in sciatica, Brenner's order of contraction of muscles in response to the closure and opening of the voltaic circuit is disturbed. Contraction has followed closure of the circuit with the *positive* pole upon the nerve sooner than with the *negative* pole upon the nerve, which is just the reverse of what obtains in the normal state. It chanced to myself, on one occasion, to observe that in a limb affected by sciatica the contraction which followed closure of the circuit with the *positive* pole upon the nerve equalled in vigour and occurred as early as that which took place when the *negative* pole was on the nerve. I noted down the fact at the time, but it was only on reading Eulenburg's remarks upon the subject lately that my attention was called to it. I cannot, therefore, say whether the circumstance is of common occurrence or not.

THE RETURN ON SCIATICA.

In answer to our second issue of questions—the subject of sciatica being selected this time—we have to acknowledge answers from no less than sixty-three subscribers to the *Practitioner.* To these gentlemen we return our sincere thanks for the trouble they have so kindly given themselves to meet our wishes. In many of the cases elaborate pains have been taken to answer the questions categorically, while in other cases more general answers have been returned. As an outcome of this lack of uniformity our report will not be so complete as we could have wished. We also should have liked to give some representation of each gentleman's views, if space would have permitted of our doing so. As far as is possible the return will be the reflex of the practice of the profession. Of the gentlemen who have been good enough to answer our questions, we find the names of Mr. Alderson, Hammersmith; Dr. Barkwell, Cheyenne, U.S.A.; Dr. John Beddoe; Dr. Brandt, Oporto; Dr. Brockman, Madras; Mr. S. Burrows; Dr. Cahill, of Knightsbridge; Dr. A. Carroll, New Brighton, N.Y.; Dr. Collins, of Melbourne; Dr. Creighton, Tavistock; Mr. Couldroy, of Littleborough; Dr. Deville, of Harrogate; Dr. Douglass, of Bournemouth; Dr. Edgar, of St. Louis, U.S.A.; Dr. Fairbanks, of Wells; Dr. Forrest, of Florence; Mr. Gabb; Mr. Grabham, Pontefract; Dr. A. Grinders, Normanton; Dr. Hackett, Sidney, N.S.W.; T. Hayden; Dr. S. Holden, of Sudbury; W. B. Holderness, Huntingdon; Dr. A. Hudson, of Dublin; Dr. Talfourd Jones; Dr. Londereggio, St. Gall, Switzerland; Dr. T. Mays, Upper Lehigh, Pa., U.S.A.; Mr. Monat, Swansea; Dr. Nicol, Llandudno; Dr. David Page, Kendal; Dr. Purdon, Belfast; Dr. Polargii Putoryii, India; Dr. Hall Redwood, of Rhymney; Dr. Kent Spender, of Bath; Dr.

Wilberforce Smith; Mr. Spark, of Bucklyvie; Mr. S. Thomson, of Ashton; J. A. Watson and Dr. D. Wooman, U.S.A.; W. O. Derby; ΣΣΡΩΔΕΥ; several names illegible; one which is dated Enniscorthy, and the rest anonymous. To these gentlemen our kindest thanks are due, and though many have not signed their names, their returns are equally carefully made: in fact, some of the most careful returns are from these anonymous writers.

Pursuing the plan adopted in the first return, we will give the results in figures, believing this to represent in the fairest way the opinions of those who have answered our questions. Out of the total number of answers received up to the present time —viz., 63—we find that 49 recognise the rheumatic form of sciatica, 40 the gouty, and 39 the neuralgic form. The syphilitic form is spoken of by 12; while 11 have seen it produced by pressure: in two cases it has resulted from the pressure of the gravid uterus. Chronic periostitis has been found to cause it in the experience of 7 writers. No less than 5 speak of malarial sciatica, evidently regarding it as one of the neurosal sequelæ of malarial infection. Other 3 writers describe an inflammatory form of sciatica. Of the remainder, 1 alludes to cancer as a cause, 1 to struma; while 1 speaks of a toxic form, 1 of its dyspeptic origin, and 1 is opposed to any divisions.

Of the remedial agents resorted to for the relief of this affection some are evidently largely used, while others are in less repute. It would be impossible in the space at our disposal to arrange the different agents as used in each form, so great is the diversity of practice. So we give them in numerical order, after which the more especial application of different agents to the various forms will be furnished. As might be supposed from the order of recognition given above, the agents chiefly used are iodide of potassium, colchicum, and quinine. Quinine heads the list—29; the iodide follows—28; while colchicum is mentioned in 27 of the returns. Bicarbonate of potash is given by name by 15, while 14 speak generally of alkalies. Iron is alluded to by 14, arsenic by 11, opium or morphia by 10, guaiacum by 7, aconite by 7, and mercury by 6. The combination of colchicum with magnesia is referred to by several writers in different sections of their answers. No less than 6 resort to the chloride of ammonium; while but 4 refer to lithia. Actea racemosa is in use with 4;

colocynth is the favourite therapeutic missile of 1 gentleman; scoparium is used by 1; croton chloral 1; chloral 1 (it may strike some readers as strange that these two powerful agents are not more largely used; but it is evident from the comparatively small resort to opium that analgesics are not much relied upon for the relief of sciatica when given by the mouth, that is), conium 1, and henbane 1. Turpentine is the sheet-anchor of 1, phosphorus of 1, salicine is mentioned by 1, and trimethylanine by 1; while one gentleman regards sciatica as entirely a neurosal affection, to be exclusively treated by the combination of strychnine and arsenic. The answers to the query, "What preparations and dose do you prefer?" are generally of too vague a character to be classified, and where the dose, &c. of one favourite drug is given, the details would occupy more space than they seem to warrant. Of the total answers, 15 speak of the necessity for full doses of the agents employed; 9 refer to the use of purgatives; one gentleman has great faith in the citrate of iron, while 1 uses no drugs specially, and 1 ignores them on principle, preferring other measures.

As some further elaboration of the answers to this question, and as including the most practical answer to the query, we will give the following verbatim extracts from several of the most elaborate answers:—"Rheumatic or gouty, alkalies, bicarbonate (℈ss) and iodide of potassium (℈ss). Neuralgic, quinine (2 to 5 grs.) and nux vomica (♏5). Mechanical from pressure, purgatives, followed by sulphate of magnesia (ʒi.), quinine (gr. 1), or nux vomica (♏5)." A second says:—"Rheumatic, iodide of potassium. Gouty, alkaline waters with colchicum occasionally. Neuralgic, quinine with iron, strychnia, or valerianate of zinc. Syphilitic, bichloride of mercury." A third says:—"Rheumatic, bicarbonate of potash and iodide of potassium, from 5 to 30 grains three times daily. Gouty, the same with colchicum. In the neuralgic form, quinine, bromide of potassium, and iron. Specific, the biniodide of mercury, or large doses of iodide of potassium." A fourth says:—"In rheumatic form, 12 grains of salicine every six hours. Gouty, colchicum and opium in full doses. Neuralgic, aconite and iodide of potassium. Syphilitic, the bichloride of mercury, with arsenic and large doses of iodide of potassium." A fifth says:—"In rheumatic forms, alkalies, purgatives, and sedatives, white mixture and pulv. Dover (℈ss) at bedtime. Gouty, alkalies with colchicum (♏x.), and sedatives, as opium (gr. i.) or morphia (gr. ⅙). Neuralgic, bromide of potassium or ammonium (7½ grs.), morphia, (gr. ⅛), or ten minims of tincture of aconite." A sixth puts it:—"Rheumatic, alkalies and iodide of potassium. Gouty, colchicum with magnesia. Neuralgic, quinine and arsenic. Of all full doses." And a seventh, who only recognises the rheumatic and the neuralgic forms, says:—"Rheumatic, iodide of potassium (grs. v. to x.) and tinct. aconite (♏x.), ter in die. Neuralgic, tincture of actea racemosa (ʒi. to ʒii.) and bromide of potassium, ter in die." Finally, an eighth says:—"Rheumatic, bicarbonate of potash (ʒss), ter in die. Gouty, same with vin colchici (♏xx.). Neuralgic, quinine, (grs. 5), ter in die. Chronic periostitis, iodide of potassium, (grs. 5), ter in die." While the favourite external application with this gentleman is a liniment containing "ext. belladonnæ (ʒii.), liq. opii sed. (ʒvi.), chloroform and glycerine a.a. (℥ss), to be spread upon lint and covered with oil-silk."

The local measures employed are various in kind and nature. The hypodermic injection is spoken of (often in terms of high praise) by no less than 34 practitioners; of these 12 use a combination of opium and belladonna for the purpose of injection. No less than 33 resort to liniments, the formula of which, when given, is much like that quoted above. Blisters are used by 23, of whom 5 prefer to dress the blister afterwards with morphia. Ointments containing analgesics are used by 5: it is clear that local analgesics are more in favour than the general administration of them in this affection. Counter irritation is mentioned by 5. Hot baths are spoken of by 5, hot flannels by 3, and warm fomentations by 1. Poultices are advocated by no less than 11 of our answerers; while 2 resort to cupping; and 2 others believe in dusting the limb with sulphur; while one gentleman declares that local measures are useless. Plasters have 3 advocates. As to the particular form preferred, the only agent especially mentioned is Corrigan's hammer, and that chiefly in answer to the last question, viz., the surgical measures employed.

As to the question of diet and regimen, it is simply impossible to give a strictly true representation of all the views except by giving the answers verbatim. We may say that 18 advocate full diet, and 17 simple diet, pretty much according to the general rules in vogue in the profession. No less than 15 advise the resort to stimulants, while 14 are opposed to them. Again we find, as in the first return, the American line of treatment inclines more to a generous diet with wine, than does the European plan. A varied diet is recommended by 12, while 5 advise a non-nitrogenised diet, 2 are in favour of fatty food, while 1 is opposed to all sour matters.

The questions as to how far the treatment is modified by the constitution of the patient, and by age and sex, are very commonly left unanswered; and the answers, when given, represent individual views difficult to classify with any approach to satisfaction. So far as the returns will permit of arrangement, we may say that 7 refer especially to tonics in strumous patients, while 5 prefer cod-liver oil in those cases. Other 5 refer to tonics in the neuralgic forms. As to age, 7 declare it makes no difference to their treatment, and 4 are of the same opinion as to sex. Of the whole answers 19 allude to age and sex in a more or less vague way, of which it would be impossible to give a summary of any value.

Constipation is overcome by various methods. Thus 11 speak broadly of purgatives, and 7 of enemata, colocynth is preferred by 6, while 5 resort to mineral waters. Saline aperients have 2 advocates, castor oil 2, croton oil 2, and nux vomica 2. Buckthorn has one supporter, hot baths and friction 1, belladonna and strychnia in combination 1, while one gentleman is against aperients generally.

As to the presence of syphilis, 16 refer to iodide of potassium, while 13 mention mercury (of these many of the answerers speak of both, and a smaller number of one agent only). One prefers to add chloride of ammonium to the bichloride of mercury, 1 speaks of the syrup of the iodide of iron, and 1 prefers guaiacum, while once more we have 1 respondent expressing his opinion against all drugs. This isolated supporter of the negative is not the same gentleman in every case.

The answers as to the treatment of the paralysis after the pain is gone are full and instructive. Some form of electricity is generally preferred. Thus 13 speak of galvanism, 10 of Faradization, and 9 of electricity. Of these, 11 are in favour of the constant current, while 1 prefers the interrupted current. The next most general treatment is friction 12, shampooing 6, the douche 4, and massage 2. Rest is mentioned as necessary by 7 gentlemen. The resort to the use of strychnia is advocated by 8, while iodide of potassium is used by 1. Stimulating liniments are in favour with 3, and baths with 5, while flannel has one advocate. No less than 4 say they have never seen any subsequent paralysis, and 1 says he knows little about it.

In answer to the query, "Is electricity useful?" 23 reply "yes" and 4 "no." Of the others 8 have never tried it, 4 say they know little about it, 1 says he cannot say, and 1 is opposed to it. In 2 answers it is stated that its use should be confined to the later stages of the case.

Cod-liver oil is apparently in great favour, being in use with no less than 40 of our respondents, many of whom speak highly of it. A number, however, state that they only resort to it in strumous cases. Of the others 8 say they rarely prescribe it, and 1 never tried it.

As to the surgical measures employed no less than 25 gentlemen state that they never resort to them. Punctures seem the favourite measure with 15, and Corrigan's hammer with 11; cupping is resorted to by 2, while one gentleman thinks he would go the length of section, and another would try stretching the nerve, if occasion required.

ON THE CURATIVE EFFECTS OF MILD AND CONTINUED COUNTER-IRRITATION OF THE BACK IN CASES OF GENERAL NERVOUS DEBILITY AND IN CERTAIN CASES OF SPINAL IRRITATION.

BY ARTHUR GAMGEE, M.D., F.R.S.

Brackenbury Professor of Physiology in Owens College.

1. I HAVE long been convinced that physicians are very imperfectly acquainted with, and are far too sparing in their use of counter-irritation in a class of cases in which I have found it to be of immense service, and I therefore willingly comply with the request of the Editor of the *Practitioner* that I should briefly state the results of my personal experience of counter-irritation of the back in the classes of cases mentioned in the title of this paper.

In the first place, it is of the greatest importance to describe the kind and extent of counter-irritation to which I refer, for as the observations of physicians and the experiments of physiologists teach us, very different effects on the organism are produced by cutaneous irritation of different intensity and extent.

The preparation which I have almost exclusively employed to produce counter-irritation of the skin of the back in the cases now under discussion has been the Linimentum Sinapis Co. of the British Pharmacopœia. This preparation owes its activity both to the essential oil of mustard and to ethereal extract of mezereon. In consequence of the expensive character of the former of the two constituents, it is much adulterated, and the liniment made from it is not at all unfrequently almost inactive.

When prepared with pure essential oil of mustard, the liniment should possess a very pungent odour, and should produce an almost painfully acute sensation in the nostrils when it is smelt. If properly prepared a few drops of linimentum sinapis sprinkled over a pad of cotton-wool ten or twelve inches long and four or five inches broad will suffice to produce in a few minutes pretty intense redness of the skin of the back, accompanied by more or less of the painful burning sensation characteristic of mustard. This method of applying the liniment is excellent, and is naturally suggested when it is employed in a sudden emergency in place of a mustard poultice. As a rule, however, where it is deemed necessary to keep up counter-irritation of the back for considerable periods of time, it is best to cause the patient to wear a strip of spongio-piline four or five inches broad, and of the length desired. In the case of persons with tender skins the irritation and pain caused by even a very few drops of the liniment (which is diffused by sprinkling and rubbing one part of the spongio-piline against the other) is so considerable, that the application cannot at first be continued for many minutes. After a day or two the patient usually becomes able to bear the strip for several hours, and finds that the sensation of irritation is decidedly more pleasurable than painful. If, as frequently happens, the patient, having experienced benefit from previous applications, has sprinkled too large a quantity of the liniment upon the spongio-piline, the irritation produced may be so considerable as to compel an intermission of the treatment for a day or two. The irritated part then usually remains deeply congested and hot for several hours, only very rarely presenting any vesications.

The great advantages of the linimentum sinapis over any other similar preparation with which I am acquainted, lies in the fact that it produces a remarkably active irritation of the sensory nerves of the skin, which subsides to a great extent when the preparation is removed, but which can be renewed almost indefinitely without leading to any eczematous, pustular, or ulcerative condition.

2. *On the use of counter-irritation in cases of nervous debility.* Perhaps no class of cases demonstrates more convincingly the beneficial action of counter-irritation than cases of nervous debility,

Under the general and somewhat indefinite term "nervous debility," I mean to include cases in which, either as a result of long-continued bodily and mental exertion, or of undue excitement of certain cranial and spinal centres, or of a disturbed nutritive balance of the organism generally, the individual becomes the seat of symptoms which indicate that the nerve centres are in an enfeebled condition, and specially that upon very slight exertion they manifest the symptoms of fatigue. Whilst the intellectual phenomena in these cases are very varying in character and degree, and very often are absent, rarely presenting themselves in a more obtrusive form than by a disinclination or inability for intellectual exertion, usually accompanied, it is true, by some sleeplessness, there are other symptoms which are much more constant; the inability to undertake even moderate muscular exertion, at any rate without distressing exhaustion supervening, the deep-seated pain in the dorsal and lumbar regions of the spine, and in males the diminution or abrogation of sexual passion, are amongst the more common symptoms. To these may be added neuralgic pains of the limbs, especially of the legs, and sometimes twitchings of the muscles of the lower extremities. In the latter cases it would appear that the reflex excitability of the cord is increased, or that the inhibitory action of the encephalic over the spinal centres is diminished. Admirable examples of general nervous debility are presented to us by various classes of cases. We see them in women exhausted by rapidly-succeeding pregnancies or over lactation, we observe them as a result of sexual excesses, and they occur in an exquisite form in association with the intellectual or emotional phenomena of hysteria.

Without in the least wishing to disparage the use of those remedies which we are wont to employ in the treatment of these cases, and which, as in the case of iron, cod-liver oil, and phosphorus, probably act beneficially by supplying to an enfeebled and *materially* exhausted body the food which certain of its tissue-elements require, I would insist upon the great value of counter-irritation as a most important adjuvant.

In all the classes of cases referred to above I have tried the effect of more or less longer continued counter-irritation by mustard, and in all with an effect much more obvious than followed other methods of treatment, not omitting the judicious use of the constant current.

The general result of the use of this method of counter-irritation may be very shortly described. On the first or second day of the treatment, the patient, if a delicate hysterical girl, may complain that the pain caused by the mustard is almost unbearable, and she may declare that the application cannot be continued. By diminishing the amount of mustard-oil used, however, all such urgent objections on the part of the patient are removed. As soon as the application has been so controlled as to bring on merely an active glow and not unpleasant tingling of the skin, the patient declares that the increase in her strength is marvellous; the pains in the back and limbs undergo a diminution, or, as long as the mustard counter-irritation is kept up, are completely in abeyance, the irritability of temper diminishes, and simultaneously the general health undergoes marked improvement.

The increased feeling of vigour produced by the treatment is not illusory; as a rule I have found that the improvement thus commenced has kept up, so that a hysterical girl who had been for some weeks confined during the day to a couch to which she could with difficulty make her way from her bedroom, has in a few days cheerfully taken walks of considerable length.

In writing this description I have present in my memory the cases of several enfeebled or hysterical girls, one of a medical man, who, after a very severe attack of typhus, which seized him when his strength had been severely taxed by an unusual amount of mental work, presented many of the features of cases of spinal irritation, and two or three cases of nervous debility resulting from sexual excesses.

3. Admitting the accuracy of my statements—and here I would insist that they apply only to counter-irritation carried on according to the method which I have described—*can any rational explanation of the satisfactory results be given?* We are in the first place met by the great difficulty that we do not know the exact nature of the physical changes in the nerve-centres, or the exact nature of the altered nutritive processes in those centres, which coincide with the symptoms of general

nervous debility and so-called spinal irritation, and in the second place by the difficulty of asserting with precision what will be the effect upon the system of a certain measure of irritation of sensory nerves. It may, however, be well to examine these questions by the light of our present scientific knowledge.

All acts of the body are associated with material change, and in any given kind of act in any given individual (assuming his condition to remain sensibly constant) the material change bears a certain proportion to the intensity of the activity. Some individuals are wasteful machines, the amount of their available activities being small in comparison with their material receipts; and similarly the individual organs of different individuals, according to their more or less perfect adjustment, out of a certain store of energy-yielding material produce results which differ in quality and quantity.

There is perhaps no exception to the rule that all acts of the body are separated from one another by periods of repose, the period of repose being perhaps always the period of increased nutritive activity. Thus, if we take the case of an organ which at first strikes us as continually in action—the heart—we find that it is at rest during a longer period than it is in action, and the period of mechanical inactivity is the period of high nutritive activity.

Continuous activity of any organ leads to *fatigue,* and fatigue appears to be due partly to an exhaustion of the store of energy-yielding material which every organ possesses within itself, but in great measure to the definite action of chemical substances, which are the results of the operation of activity upon certain structural elements of the fatigued part.

Those organs of our body of which the activities are uncontrolled by our wills cannot be easily fatigued, the conditions of their activity having been so regulated that of necessity a period of rest follows a period of activity. Thus we cannot directly induce fatigue of our hearts, because the very nature of the mechanism of the organ compels an alternation of rest and activity, and provides for a certain measure of constancy in the total amount of work done, even when its distribution in time is altered.

Increased blood-supply, it has been said, corresponds with increased activity of the organs, and diminished blood-supply with rest, and the period of rest is the period of recuperation or restoration. At first there appears to be an inconsistency in the assertion, which disappears, however, when we consider it further. All operations of the body which are accompanied with the conversion of potential into kinetic energy are accompanied by oxidation; oxygen is required in increased amount, then, during periods of activity; and it is very probable that the increased blood-supply of the active organ has for its chief objects to supply an abundance of oxygen, to remove the large quantities of carbonic acid, and the smaller quantities of waste substances, which are injurious and fatigue-inducing.

I would not, of course, commit myself to the absurd statement, that the restoration of energy-yielding matters in organs does not occur *pari passu* with its consumption, for it is probable that always the two processes of integration and disintegration proceed side by side (in activity the latter, and in rest the former preponderating); but what I would maintain is that although the amount of blood, and therefore of nutritive matters, supplied to the active organ is absolutely larger than that supplied to the inactive organ, the relative amount of matter available for restoration is greater in the latter than in the former case. An abundant blood-supply, probably, is followed, *as a necessity,* by large tissue changes, and therefore by loss of energy, and the period of restoration is the period in which income exceeds expenditure and stock is accumulated.

It will be remarked by the reader who is acquainted with physiology, that my reasoning is based very much upon that which is known to occur in muscle; that it is applicable, however, to the organs of the nervous system can be easily shown.

The activity of the brain is like the activity of a gland accompanied by an increased blood-supply; at any rate we know that functional inactivity, as it is manifested in sleep, is accompanied by a greatly diminished blood-supply. That which is unquestionably true for the brain is almost certainly true of the spinal cord. Now up to a certain point the greater the activity of the brain during a certain limited period, the greater is the subsequent tendency to sleep; in other words, the greater has been the call upon the energy-yielding store of the organ, the greater tendency there is for it to pass into that condition in which expenditure sinks to a minimum.

If, however, the activity of the brain is carried beyond a certain point, the fatigue of the organ leads to a dream-disturbed sleep, or to a more or less prolonged sleeplessness, followed by sleep, and in either case, when the sleeper awakes, he will probably be still suffering from some symptoms of nervous fatigue; there has not been complete restoration.

Now what is the proximate cause of the dreaming and the sleeplessness? Almost certainly, it is due to a continued hyperæmia of the brain-centres. As a result of over-exertion, the blood-vessels of these centres lose their power of returning to their original size, and as with the continuance of a large blood-supply we have a continuance of brain activity manifested by dreaming or actual sleeplessness, restoration is not possible, on this view, as long as the blood-supply is too abundant.

But we know how serious are the results to the individual if the causes which lead to sleeplessness from overwork remain long in operation; he passes then into a condition of almost chronic brain-fatigue, and he becomes subject to neuralgias, to insanity, and to disorders of the general nutrition.

In the preceding paragraphs I have intended to show that the way in which excessive brain-work injures is, at first at any rate, by leading to a certain amount of vaso-motor paralysis of the vessels of the encephalic centres. I would now extend that reasoning to the spinal cord, and argue that in all probability the excessive and prolonged activity of its centres lead to the same results as are observed in the case of the brain, viz., to continuous hyperæmia, and the latter is inimical to restoration. Thus I would argue does excessive and abnormal activity of the centres connected with the organs of generation lead most probably to the symptoms of nervous debility, as these centres are spinal, but in relation to psychical centres of activity, the results of their excessive activity may be either spinal or cerebral, according to the nature of the individual.

That hyperæmia of the cord accompanies the general debility which is observed in the libertine, or in the hysterical girl, appears to me very probable indeed. The vague neuralgic pains in the limbs, the deeply-seated back-ache, the spasmodic twitchings which sometimes occur, are probably indirectly produced by a hyperæmia of the nerve-centres, and are symptoms which are more probably central than peripheric.

I come now to discuss the mode of operation of extensive but mild counter-irritation of the back in cases of general nervous debility.

As I said in the earlier part of this paper, the observations of physicians confirm the experiments of physiologists, in so far as the effects of irritation of sensory nerves are concerned. A moderate stimulation of the sensory nerves of the skin appears as a most general result to lead to increased vascular tension, due to an increased activity of the vaso-motor centre, the constriction of small arteries which occurs in the body generally being often accompanied by a local vascular dilatation of the irritated part. Now it is true that in experiments on animals it is often found that after a preliminary stage of increased vascular tension, due to the irritation of the central end of a sensory nerve, there is a subsequent reactive dilatation which we may explain as either due to a vaso-motor paralysis or to an increased activity of the vaso-inhibitory nerves; but it is quite conceivable that when we are able, by the aid of the sensitiveness of man, to regulate the cutaneous irritation so as to produce only very moderate irritation of the vaso-motor centre, there may be produced a tonic increase of vascular tension, lasting as long as the excitation is kept up.

If it be true that the symptoms of nervous debility and spinal irritation are, at any rate in great part, due to a lowered vascular tone of the nerve-centres, we can easily conceive that benefit should result from such counter-irritation as I have recommended, for the vessels of the nerve-centres will gradually be restored to their normal tone, their abnormal excitability will be depressed, and they will pass into a condition in which restoration is possible.

I have said in the course of this paper that an effect of counter-irritation of the back is to cause the patient to feel increased general strength, and that this frequently leads to excessive applications of the rubefacient.

Now this feeling of well-being appears to be wonderfully like that which cold bathing produces, only not so evanescent, and still more like the feeling which a constant current applied to the skin of the back induces. Now in both these cases the vascular tonus is doubtless largely increased for a longer or shorter time.

The healthy, vigorous man, who is in condition, has a tolerably high arterial tension; his vaso-motor centre is in a state of powerful tonic excitation, and his vaso-motor nerves are not readily inhibited (he cannot be easily made to blush, for instance).

The circumstances which increase our vascular tonus—as long as our organs are healthy—appear to add to our vigour. Why should it be so? If rest is the period of recuperation or restoration, if a diminished blood-supply be a condition of rest, then a high degree of activity of the vaso-motor centre should tend to health; by preventing waste of energy until each organ is needed (and then the vaso-motor nerves are either centrally or locally inhibited or antagonized), by keeping each organ at rest until its activity is needed, there will be a greater store of energy-yielding material at disposal, and the activity of the tissue elements will be all the more perfect in that they are uninjured by the fatigue-producing substances which are the products of activity: in other words, that man will, *cæteris paribus,* be the most efficient and economical machine whose organs are the seat of the smallest waste *as long as they are inactive;* naturally, however, the quality and quantity of the work will depend very much on the quality of the organ, on its power of storing-up, and on the perfection of the vascular mechanism, in so far that this must permit of as large a supply of blood being given at the required moment for the maximum conversion of energy.

There are two points upon which I think it right to add some observations, so as to prevent my being misunderstood.

1. The facts which are day by day being accumulated point to the existence of local vaso-motor mechanisms, which are subordinated to the general vaso-motor centre (if such a centre really exists apart from the former), so that it is not only conceivable, but certain, that an affection of, or a change in, a local vaso-motor mechanism might be induced without a necessary affection of the general vaso-motor mechanism. A general high tonus does not, for example, imply that its possessor should have

a tendency to sleep, for sleep is doubtless due to a positive cerebral anæmia, to the production of which the activity of a centre, specially connected with the cerebral circulation, probably contributes.

2. Whilst such counter-irritation as I have recommended appears to exert a tonic action on the vaso-motor centre, and on the body generally, I am quite aware that several methods of counter-irritation produce an opposite effect. The shock and great depression which, especially in women, sometimes follow the application of blisters, seem to show that severe counter-irritation very frequently tends to depress rather than to raise the tone of the vascular system.

Reviews.

1. *The Physiology of Mind.* By HENRY MAUDSLEY, M.D. Macmillan and Co.

2. *The Functions of the Brain.* By DAVID FERRIER, M.D., F.R.S., Smith, Elder, and Co.

THE two books named above have by a lucky chance appeared almost simultaneously. The physiology of mind and the functions of the brain are presumably much the same thing; Professor Ferrier would say, mind was a function of the brain, and Professor Maudsley would say, the brain was the organ of mind; but no two works could be more different. They are not, however, for this antagonistic, but rather complementary; the one to the other, as indeed is most happily indicated by the titles.

Dr. Maudsley's is an old friend with a new face, being the first part, considerably amplified, of his work on the Physiology and Pathology of the Mind, making a third edition of this portion. The verdict of the profession and of the scientific public has therefore been given upon it in a favourable sense, and we have only to ratify it. Whatever Dr. Maudsley writes is sure to have fervour and vehemence, and as in his case out of the fulness of the heart the mouth speaketh, it is fortunate that his mind has saturated itself with the old English classics, so that his abounding eloquence flows in pleasing channels. He goes indeed farther back, for many of his verbal inspirations and Homeric turns of expression are quite common, and illustrations occur which recall Ovid. Shakespeare is, so to speak, his mother tongue, and, like many Englishmen, when in earnest, he finds nothing so apt for conveying his meaning in its full intensity and depth as passages from the Old Testament Scriptures. The reader is liable to be carried away in the rush of words, and it is an absolute necessity that he should, if at all amenable to the influence of rhetoric, quell his excitement at the end of each chapter by a careful study of the tabulated contents at the beginning of the work. These tables of contents are really excellent, and exhibit the close and coherent chain of reasoning which underlies the vehement utterances and almost superabundant illustrations of the text.

The book is divided into eight chapters, some of which overlap each other a good deal; for example, we have Chap. v. on the supreme cerebral centres and ideation, Chap. vi. on emotions or affections of mind, Chap. vii. on volition, Chap. viii. on actuation, Chap. ix. on memory and imagination. Obviously emotions, volition, actuation, memory, imagination are related to the supreme cerebral centres as closely as ideation, and no one has laboured more than Dr. Maudsley to show that ideation, emotion, and volition are indissolubly associated, and are in some sense merely different aspects of the same operation, and we think, on the other hand, that actuation might have received further elucidation, by being considered in connection with the sensory centres through which the so-called motor intuitions are organised.

One of Dr. Maudsley's great aims is to overthrow the metaphysical conception of mind, and to exhibit the brain, not as the instrument, which mind as a metaphysical entity employs, but as the organ whose function is mind. This is the burden of the second chapter, on mind and the nervous system. In the introductory chapter on the method of the study of mind, Dr. Maudsley, as regards the old method of interpretation of self-consciousness, not only slays the slain over and over again, but drags it thrice round the arena at his chariot-wheel, and yet if the book has a fault, it arises from want of complete emancipation from the terms and modes of thought which took their origin in metaphysics. There are many points on which we differ from Dr. Maudsley, and we think he has by no means taken full advantage of the light thrown on the physiology of the mental operations by aphasia, and by recent investigations such as those of Hitzig and Ferrier; but the book is one which may be recommended on every ground.

In Dr. Ferrier's work we naturally turn first to the account of the experimental researches on the function of different convolutions, with which his name is associated. They are summarised, and the results given clearly and definitely. Incited to the investigation by the observations and speculations of Dr. Hughlings Jackson on the effects of disease in certain convolutions, following Hitzig in point of time, but apparently quite independently, and employing a superior method, he identified the motor area of the cerebral cortex which lies, as is now well known, in monkeys and in man, along each side of the sulcus of Rolando, comprising mainly the two ascending gyri, which bound it, but extending forwards and backwards for a short distance along gyri which join them. The motor centres of the lower extremity occupy the upper part of this area, those of the face and tongue, the lower or Sylvian end or expansion of the two convolutions, those of the arm and hand being intermediate in situation. The fact that constant and definite movements follow the application of the interrupted Faradic current in given situations is placed entirely beyond dispute; but objections have been raised to the interpretation put upon the results. It has been said that the electricity is conducted vaguely, or along nerve-fibres accompanying the vessels of the pia-mater. This is almost on the face of it absurd, and has been shown to be untrue. Other interpretations are that the centres identified are centres of co-ordination, or are seats of muscular sense, and it has even been gravely suggested that the movements are comparable with those induced by tickling the foot. These are overthrown by Ferrier, and may be set aside, but it may still be argued with some plausibility that the functional activity of the cells is not excited, but that the Faradic currents act upon the fibres leading from them to the lower centres; since if the grey cortex is removed or destroyed, the movements can be reproduced by applying the electrodes to the exposed white substance of the gyrus. We think Dr. Ferrier shows good cause in favour of the participation of the cells themselves, but in any case the conclusion remains that in these convolutions we have the "way out" of volitional motor impulses, and since their cells must be the agents in the transmission of such impulses, they constitute the motor centres of the cortex. An interesting corroborative fact is that when a given cortical centre, identified by stimulation, is removed, a corresponding paralysis is produced. In dogs, however, and lower animals it is fugitive, and power returns. Carville and Duret have shown by destruction of the corresponding centres of the opposite hemisphere, and by section of the corpus callosum, that there is no *suppléance*, or compensation, by the other half of the brain, and they consider that some other part of the cortex must take on the function of the portion destroyed. Ferrier more justly attributes the recovery of power to the substitution of automatic for volitional movements, to which the mechanism of the nervous system readily lends itself in dogs, and he states that in monkeys and in man the paralysis induced by destruction of a cortical motor centre is permanent. We venture, however, to question this opinion; the experimental evidence adduced in the case of the monkey is not conclusive, and if paralysis were the invariable result of disease in the convolutions constituting the motor area in man, it would scarcely have been left to Hitzig and Ferrier to identify this region by their experiments. Physicians and pathologists would have done it long since. It appears to us that the best illustrative parallel to the recovery from paralysis, induced by ablation of a motor cortical centre in the dog, is furnished by some cases of aphasia from lesion of the third left frontal convolution, in which the right hemiplegia of limbs and face is temporary, the speechlessness persisting. We have similarly seen cases in which, without marked aphasia, the right hand has completely recovered power, but has lost its *dexterity*.

But there are other results of Dr. Ferrier's experimental investigations, which are of even greater interest than the identification of the motor cortical centres, and in which he stands alone; this is the identification of the centres of sensation, or, as we should prefer to say, of perception. In the course of his experiments he elicited movements by stimulation of other convolutions than those in which the motor centres are situated, and he observed that the movements were such as might indicate attention to sensory impressions of one kind or another. This was the clue which led to the determination of the function of the part, and it is not too much to say that Dr. Ferrier, by seizing it, prevented a relapse of the entire question into confusion and uncertainty. Faradization of the angular gyrus, for example, caused movements, suggestive of attention to visual impressions, and it was found that removal of this part of the cortex in one hemisphere induced temporary loss of sight in the opposite eye, and its destruction in both hemispheres complete and permanent blindness. By like observation and experiment the seat of auditory perception was located in the infra-marginal Sylvian gyrus of the temporo-sphenoidal lobe; the centre of tactile sensibility referred with a high degree of probability, though less conclusively, on account of the difficulties attending the experiments required, to the uncinate gyrus; the centres of taste and smell, to the uncinate lobule, or subiculum cornu ammonis. It is true that these results still await confirmation, but we cannot doubt that this will be forthcoming, and we repeat, that they will confer a higher title to fame as a discoverer and elucidator of the functional mechanism of the brain even than the determination of the motor centre.

We have little space for remarks on the rest of the work, but we may add, as regards experimental inquiry into the function of other parts of the nerve centre, that removal of the occipital lobes of the brain in a monkey seemed to destroy appetite for food, of the anterior lobes to diminish greatly, if not to abolish, the natural inquisitiveness of the animal. But we do not agree with the author if he considers the organic sensations to be an adequate functional occupation for the posterior lobes. We were glad to find that the cerebellum is not supposed to have for its office simply the motor control of the eyes, which was the conclusion to which earlier experiments seemed to point, and we think some explanation of the opisthotonos which is produced by stimulation of the corpora quadrigemina, may yet be found which will not make them motor ganglia as well as centres of vision. But Professor Ferrier must already feel that new problems await solution at his hands, and that having done so much, he must go on, lest others gather laurels which ought to be his own. One such problem, simple in its elements, but having a profound significance, we may point out. Faradization of the angular gyrus, the visual perceptive centre, induces movements resembling those which are produced by stimulation of the posterior end of the second or middle frontal convolution. Are these movements excited by transmission of the stimulus along arcuate commissural fibres to this motor centre in the frontal cortex, or through fibres passing directly to the motor ganglia at the base of the brain? An answer would be obtained by removal of the part of the frontal convolution concerned: if the movements still followed stimulation of the angular gyrus (which we may say, in passing, we should expect to be the case), then there are motor fibres starting from perceptive centres.

In considering the functions of the brain on the basis of the discoveries we have mentioned, Dr. Ferrier adheres to what is sometimes called the English view of the general relations of the cord, meso-cephalon, basal ganglia and hemisphere, and contributes to place this on a firmer footing. Interesting discussions are those on the process of equilibration and the influence upon it of the semicircular canals, on aphasia and hemi-anæsthesia. On all these points the author brings to bear a clear and vigorous intellect, and the entire character of the work proves that it was no mere chance which led to the discovery of the motor and perceptive centres of the hemispheres, but that it was the experimental verification of an hypothesis projected by a mind which had penetrated the secrets of the cerebral mechanism. There is no fear, after work like this, that the physiology of the nervous system will be thrown back into chaos by the medley of facts and no facts, of reasonings and fallacies, gathered from sources of all kinds by Brown-Séquard. Dr. Ferrier has done well not to encumber his pages with arguments against the shifting and intangible conclusions advanced by this illustrious physiologist, which are sustained by no inherent vitality, but only by the respect entertained for their author.

[On account of press of matter, we are obliged to postpone Bibliography and Correspondence.—Ed. Pract.]

Clinic of the Month.

Nature and Treatment of Pernicious Anæmia.—The translation of a lecture on this subject, by Professor Quincke, has lately appeared in the *Medical Times and Gazette*, and Dr. Bradbury, of Cambridge, gives a clinical lecture on the same subject in the *British Medical Journal.* Professor Quincke remarks that the disease occurs with relative frequency in pregnancy, and that it is not unfrequently produced by other influences, such as habitual alcoholism, repeated epistaxis, typhoid fever, and protracted catarrh of the stomach and intestines. When the disease has reached a certain stage it leads to dyspepsia, vomiting, and diarrhœa. There is always a diminution in the total quantity of blood. The red corpuscles in several of Quincke's cases were egg-shaped, ovoid, crescentic, and sometimes drawn out into a pointed process, and amongst them were a number of tiny yellowish particles. The white corpuscles were abundant—there was relative leucocytosis. There is some reason for believing that the red corpuscles may be destroyed in excess in the liver, as this organ was found to contain a remarkably large proportion of iron. Defective formation of new corpuscles (anhæmatosis) and increased destruction of the elements of the blood (hæmophthisis) represent the two chief to which the disease conforms. The treatment, according to Quincke, as in other anæmiæ, must be directed against the cause of the disease. The hygienic surroundings and food must be attended to. Next to a well-selected diet, hydrochloric acid, rhubarb, and gentian gave him the best results; preparations of iron were only used when the functions of the stomach were completely restored. In cases in which fever was present quinine was given, and during convalesence lukewarm baths were ordered. Transfusion of human blood was not followed by success. Dr. Bradbury's case which occurred in a man æt. forty, was typical. The disease had lasted eighteen months, and commenced with jaundice, giddiness, and nausea. Examination of the blood showed that the red corpuscles were few, but the relative number of the white corpuscles was not increased. The diminutive red corpuscles, considered by Eichhorst to be pathognomonic of the disease, were not present. Phosphorus, perchloride of iron, and careful dieting were unsuccessfully tried, and the patient ultimately died. Post-mortem examination showed that both the liver and the spleen were soft and swollen. (*Medical Times and Gazette,* No. 1,372, and *British Medical Journal,* No. 835.)

Treatment of Ringworm by Leaves of Cassia Lata.—Dr. David Foulis states, that when resident in India (Cachar) many years ago he had numerous opportunities of observing a form of vesicular ringworm which afflicted both natives and Europeans. It commenced by a minute cluster of vesicles on the skin, soon extending in the form of a ring or segment of a ring, the centre being left free; it was very itchy, and the scratching which this induced left the little vesicles torn, and the surface raw and weeping, or else covered with scabs. Not a few of the tea-planters of the district caught the disease, and they resorted to various remedies, the favourite one being the ointment of the red iodide of mercury, applied so as to blister the skin. This gave a temporary relief at the cost of a good deal of suffering, especially if the surface affected were large. But none of the remedies in use there could at all compare for efficacy with the native remedy. This consisted in the fresh leaves of the cassia lata, called in Hindostanee the " daod patter." A few of the leaves were taken and vigorously rubbed over the diseased area until the leaves were torn to fritters; the expressed juice was left to dry on the skin, which it stained for a time of a light-brown colour. The effect invariably was that the itching at once disappeared, and that in a day or two the skin was restored to its normal healthy aspect. The process of rubbing was by no means painful; on the contrary, the patients seemed rather to feel an undefined pleasure from it. So useful did Dr. Foulis find this remedy, that he procured some cuttings of the plant and planted them in the vicinity of his bungalow, and many a time has he had the pleasure of relieving those suffering from this annoying disease by the gift of a handful or two of these leaves. He mentions, by the way, that the imported Coolies in the tea-gardens did not suffer so much from the ringworm as the native Cachar villagers. He remembers treating one of the latter, whose whole body was covered with it, and a few applications of the leaf effected a cure, which he believes was permanent. It would be interesting to learn whether the Goa-powder, recommended by Sir J. Fayrer, contains these leaves in any form; and also whether their active principle has any affinity with the chrysophanic acid which Mr. Squire finds so useful in psoriasis. The cassia lata belongs to the same genus as the senna plant, and experiment might reveal some analogy in their therapeutic actions; but he is not aware of any trials of the leaves having been made except as a remedy for ringworm. (*The British Medical Journal,* Jan. 20, 1877.)

Herpes Frontalis Treated Locally by Anodyne Amyl Colloid.—Mr. L'Heureux Blenkarne states that a patient of his, aged twenty-five, of rather sedentary occupation and bilious habit, sent for him on December 5, as he was suffering from dreadful headache. On Mr. Blenkarne's arrival he found he had well-marked herpes frontalis. He told him that he had suffered great pain over the left temple for nearly a week. The eruption appeared on December 2, and was papular at first, or, in the patient's own words, "came out in red spots." The pain gradually increased till December 4, and he had no sleep that night. On seeing him next evening the pain was excessive; calling again shortly afterwards, he took with him some anodyne amyl colloid, which he painted all round the different patches of the herpes, which were situated over the left supraorbital foramen, on the forehead, and at the outer side of the eyebrow. There was a very slight patch on the side of the nose, but no soreness or discomfiture of its lining membrane. He painted on two "coats" of the anodyne, and the relief experienced was well-nigh immediate; and the patient had a good night. There was slight recurrence of the pain next morning; he therefore painted on the anodyne again, since which time the patient has been totally free from pain. The scabs came off about the tenth day. There was no inflammation of the eye or eyelid, and no impairment of vision. The patient has never had the complaint before, nor has he been subject to the shingles. (*British Medical Journal,* December 30, 1876.)

Opium in the Treatment of Rigid Os Uteri.—It often happens that when new remedies come into vogue some of our elder and most reputed agents are apt to be neglected. Opium in the treament of tedious labours, depending upon a rigid or contracted state of the os uteri, it not so frequently resorted to now as it formerly was, chloral or chloroform being often used in its place. In the *Virginia Medical Monthly* for November, Dr. Z. Collins McElroy calls the attention of the profession to the subject by a clinical illustration of his views and practice. In reference to his case he asks—Why is this woman's os uteri in this state of rigidity or constant tension? Is it a pathological condition, to be changed by lancet, hip-baths, chloroform, &c.? "Undoubtedly the os in this case had the physiological function of contraction to retain the contents of the womb, in all respects analogous to that of the sphincter of the bowel and bladder, whose physiological design is contraction. A rigid os uteri, therefore, is a natural process out of time, rather than a pathological one." . . . . "It is simply a misapplication of a natural force intended to accomplish an important end—delivery." To restrain this misapplication of force, and obtain a co-operation of all available force for the completion of labour, the profession has had recourse to various measures, but the one remedy which will most certainly effect this purpose is opium, and it is upon this agent that Dr. McElroy relies in the management of such cases.

A propos of this subject, and of the remark just made about our partiality for new remedies, Dr. Agnew has, in the same journal, a paper on the use of gelseminum for dilatation of the cervix uteri in the non-puerperal state. He says he has found it successful in two or three cases where even very small instruments could not be introduced, and it appears from a note to this paper that Dr. R. S. Payne, U.S., had nearly two years ago found it to be of value in two cases of rigid os uteri and sphincter perinei. Whether, however, this opinion will be endorsed by the experience of other practitioners has still to be proved. (*Medical Press and Circular*, December 20, 1876.)

Quinine in the Treatment of Fissures of the Nipple.—Obstetric practitioners are much more in the habit of using quinine after child-birth than they were formerly, but we scarcely expected to hear that this agent would be found useful in the treatment of an affection which has always been regarded as more amenable to local than to constitutional remedies. Dr. Le Diberder, however, chief physician to the Lorient Hospital, is of opinion that the frequent failure of local treatment arises from the fact that this affection is only a manifestation of general disorder of the system. He says that the appearance of the fissures is soon followed by a general febrile state, of an intermittent nature, and during which the local affection is very likely to pass into engorgement of the breast, and even abscess. Accordingly, he thinks quinine will prove to be of the greatest service in those cases; and during a long experience of it he has always found that a cure was effected in from three to five days. He generally prescribed a dose of six grains early in the morning, and a similar dose about eleven o'clock A.M. Local treatment was considered of secondary importance, being confined chiefly to poultices and some simple wash or salve. (*Ibid.*)

Extracts from British and Foreign Journals.

Treatment of Chorea.—M. Hubert Guérin, of Paris, at the conclusion of a pamphlet, in which the causes, symptoms, and treatment of chorea are well given, makes the following observations. If consulted at the commencement of an attack of chorea, when it is so to speak in the acute stage, dry cupping should be applied to the vertebral column. Attention should then be paid to the cause, constipation, worms, dentition, disturbances of the menstrual functions, pregnancy, moral emotions, &c., and finally chloral or bromide of potassium should be prescribed with the object of calming the agitation when it is considerable; and the completion of the cure may be affected by the simultaneous employment of arseniate of soda, sulphur baths, and gymnastic exercises. (*Pamphlet*, 1876.)

Antagonism between Morphia and Atropia. — The following are the conclusions arrived at by Dr. Corona from his experiments :—(*a*) Atropia quickens respiration; morphia retards and modifies it. (*b*) Atropia produces convulsions in dogs and rabbits, but never sleep; morphia produces sleep and deep coma. (*c*) Atropia slows the heart's action; morphia quickens the movement of the heart. (*d*) While the heart's action is being diminished by atropia, the temperature remains stationary, or is slightly increased; during the acceleration of the heart's action by morphia, the temperature falls. (*e*) Dilatation of the pupil is the most marked symptom produced by atropia; with morphia the pupil may be dilated, stationary, or contracted. When atropia is injected in large doses into the circulation, dilatation does not occur, because both the circular and radiating fibres of the iris are paralysed. (*f*) Atropia always produces vaso-motor paralysis; morphia never does so. (*g*) Atropia depresses reflex action, and always produces paralysis of the posterior part of the body in animals; morphia either leaves reflex action intact or sometimes exalts it. (*h*) On *post-mortem* examination, the lungs, liver, and system were normal after poisoning with atropia and morphia. The heart and large vessels were always full of blood, but it was coagulated in poisoning by morphia, fluid and blackish in poisoning by atropia. The meninges were in both cases always congested, while the brain substance was constantly anæmic. The medulla oblongata and tubercula quadrigemina were never hyperæmic, while their meningeal covering was always so. (*i*) As regards the toxic dose, there was very great variation both in regard to the age and race of the animal. The toxic dose of morphia was much less in dogs than in rabbits. Atropia was tolerated in large doses; it never proved fatal in rabbits in less than 50 centigrammes, except in young and very small animals. Dr. Corona makes the following remarks on the alleged antagonism of atropia and morphia:—Morphia in small doses removes the symptoms produced by atropia, and produces sleep. During morphia sleep, atropia, even in very large doses, does not alter the symptoms due to morphia, nor does it affect the sleep. When atropia was injected in small doses, at intervals of ten minutes, although the total quantity was large, its action was more rapidly extinguished by small doses of morphia than when atropia was injected in a dose of not less than 20 centigrammes. The injection of the two poisons into the veins showed that a much smaller dose was sufficient to produce rapid and grave poisoning; but even then the morphia produced its action instantaneously, and its symptoms always superseded those of atropia. The injection into the veins of large doses of atropia and very small doses of morphia was always followed by sleep; and the manifestation of the symptoms due to atropia were tardy. In all cases, after the disappearance of the symptoms due to morphia, those due to atropia appeared in intensity, proportionate to the largeness of the dose administered for the purpose of counteracting the symptoms due to morphia. Dr. Corona concludes from these results that a partial physiological antagonism between atropia and morphia may be recognized, but that the theory of a mutual therapeutic antagonism cannot be accepted. Morphia is available as an antidote in poisoning by atropia, but poisoning by the former drug may not be combated by the latter. (*Giornale di Medicina Militaire,* April and May, quoted by *Edinburgh Med. Journal* December, 1876.)

Easy Method of Cleansing the Middle Ear of Infants.—Dr. Martin F. Coomes, of Louisville, states that he finds the syringe affords a very imperfect means, and the Eustachian catheter is as a rule interdicted in infants and children under five and six years of age. Therefore, after many unsuccessful attempts by Politzer's method, he tried a plan, the execution of which is simple, effectual, and easily accomplished. If the child is too young to stand, or is unruly, it should be placed in the arms of a nurse or assistant, on its back, inclined at an angle of forty-five degrees. The nozzle of a suitable air-bag is placed in the nose just as described in Politzer's method. The surgeon is now in readiness, with the air-bag in one hand, while the other retains its nozzle in position, and at the same time closes the meatus of the opposite side. A teaspoonful of water or milk is put into the child's mouth, which compels it to swallow; and just at the time the act of deglutition is performed the air-bag must be forcibly compressed. In this way the infant's middle ear can be cleansed as thoroughly and easily as an adult's. There is no danger in the operation. The only precaution necessary is to see that the child has no foreign body or substance in its mouth, which might be blown into the trachea. If the whole teaspoonful of liquid that is put into the child's mouth should be forced into the larynx, it would do no harm. The slight strangulation that occurs in those cases amounts to nothing; in fact, its occurrence is very rare. This method of inflating and cleansing the middle ear of infants has the following advantages:—(1) The assurance of success in every case where the Eustachian tubes are pervious, and in a normal condition; (2) The ease and rapidity with which it can be accomplished; (3) It is applicable to a class of patients who will not permit the use of the Eustachian catheter, and who are unable to understand what is necessary on their part for the execution of Politzer's method, viz., a certain class of deaf-mutes and insane persons. (*The Cincinnati and Medical News,* March, 1876).

A New Method of Treating External Aneurism.—Dr. Walter Reid, R.N., gives the details of a case of popliteal aneurism which he successfully treated with Esmarch's bandage. He had already tried flexion and Carte's tourniquet, but, these means failing, he proposed to try the elastic bandage. It was passed very lightly over the tumour, and carried as high as the junction of the lower and middle thirds of the thigh. After fifty minutes, the patient having complained of severe pain above the seat of the constriction, a Carte's compressor was applied to the femoral at the pelvic brim, and the elastic tubing removed. The compressor was used as a precaution to prevent the blood-current through the main artery from breaking down and washing away the newly-formed clot which it was expected had formed in the sac. When the compressor was stopped a few minutes afterwards, no pulsation could be detected in the aneurism. The cure was complete. (*The Dublin Journal of Med. Science,* December 1st, 1876.)

Department of Public Health.

NINE PROPOSITIONS BEARING ON THE ÆTIOLOGY AND PROPHYLAXIS OF CHOLERA, DEDUCED FROM THE OFFICIAL REPORTS OF THE CHOLERA-EPIDEMIC IN EAST INDIA AND NORTH AMERICA.

BY DR. MAX VON PETTENKOFER.

Professor of Hygiene in the University of Munich.

I.

The Indian Report.—The reports of the Sanatory Commissioner with the Government of India, Dr. James Cuningham, on the presence of cholera in its proper home, with additions by Dr. Bryden, Dr. Douglas Cunningham and Dr. Lewis, have been published for twelve years. These Indian reports stand pre-eminent in the literature of cholera, on account of the extensive observations on which they are based and the strict method on which they were conducted, and have the advantage that they do not regard the facts in the light of modern views, or give only what is in accordance with the knowledge of the day, but consider cholera in the widest possible sense as an epidemic, and adduce a number of facts which are opposed to the prevailing views.

James Cuningham long delayed to draw any positive conclusions; these, however, appeared in a definite form in 1872, and differ considerably from those which are still generally accepted by physicians throughout the world. In his tenth annual report, 1873, Cuningham has summed up his views in the following nine propositions:—

"1. That if human intercourse play any part in the dissemination of cholera, it must be a very secondary part.

"2. That the facts of individual outbreaks, and especially the remarkable immunity of the attendants, are altogether opposed to the doctrine that the disease is spread by communication with the sick.

"3. That the theory which would explain the phenomena on the supposition, that in a year of epidemic prevalence very many sources of water supply over an immense area had been polluted with cholera discharges, while in a year when cholera is dormant such pollution has either been rare, or has not taken place at all, fails altogether to explain the facts, either of wide-spread prevalence or of individual outbreaks.

"4. That there is no evidence to show that a person affected with cholera multiplies within himself any specific poison, or that he disseminates any such poison, either by means of the intestinal or any other discharges.

"5. That cholera in India appears to be due to certain conditions of air and soil, or of both combined, as yet little understood, which are always more or less present in the Lower Provinces of Bengal, the endemic area, and which appear only occasionally in the Upper Provinces,—the intervals between the times of their appearance increasing as we proceed to the north-west, and being so short in the immediate neighbourhood of the Lower Provinces, that it is impossible to define exactly where the endemic limit ends.

"6. That these conditions would appear to be often singularly localized, both in the endemic and epidemic areas, as is evidenced by the very local character which so distinguishes outbreaks of the disease.

"7. That the great danger arises from exposure to these conditions, and not from exposure to any emanation from the sick.

"8. That even if the contagious character of cholera could be proved beyond all manner of doubt, any general system of quarantine, sufficiently strict to be effectual, is impracticable, and must do much more harm than good.

"9. That the great safeguards against cholera are sanitary improvements—the improvement of drainage, of water supply, of dwellings, of everything in short which can contribute to health. Of water-supply it may be remarked, not that it may be safe only against cholera evacuations and the results which have been theoretically ascribed to them, but that it may be safe against every form of impurity."

In the following annual report, Cuningham expressly calls attention to the fact, that the nine propositions contained in the report of 1873, receive strong support from the facts obtained in the year 1874, and the still more recent report of 1875 contains a mass of very striking and irrefragable evidence in favour of them, some points of which I consider it to be my duty to bring forcibly under the notice of physicians and epidemiologists.

And in the first place it is to be remarked, that the year 1875 witnessed a much wider dissemination of the epidemic than the year 1874. This is exhibited most distinctly by the following table :—

Table of Deaths from Cholera in India during the year 1875 *as compared with* 1874.

Province.	Inhabitants.	Deaths from Cholera	
		1875.	1874.
Bengal and Assam	63,787,577	116,606	73,354
North-western Provinces . .	30,769,056	41,106	6,396
Oudh	11,174,785	23,321	68
Punjaub	17,487,125	6,246	78
Central Provinces . . .	7,427,608	14,643	14
Berar	2,184,945	22,465	2
British Burmah	2,738,358	761	960
Madras and Mysore . . .	30,360,211	97,051	313
Bombay	16,228,774	47,573	37
Rajpootana, Hyderabad, and Central India	unknown	14,649	4

It must not, however, be supposed that the cholera epidemics were equally distributed in the different provinces; they were on the contrary very unequally distributed over the various districts and places, and this distribution does not exhibit the slightest connection with the principal lines of commerce of India. A part of central India (the water-shed between Nerbudda and Jumna) remained entirely free from the disease, although traversed by trunk railways; whilst cholera attacked other districts which had no railways, and scarcely even any roads, in the most virulent manner. In the Upper Provinces, again, the disease did not spread along the main roads, but over regions where the means of communication are comparatively difficult and little used, such as the spurs and outskirts of the Himalaya.

In the epidemically affected districts, the remarkable fact was established, that the cholera did not spread from place to place in a way at all corresponding to the lines of intercourse, but so irregularly, that the affected places form the exceptions. The following table of three districts, and the villages in them, is a sufficiently good example of this statement.

District.	Number of deaths from cholera.	Number of localities attacked.	Number of all villages.
Gurdaspur	1,482	164	2,179
Amritsir	1,269	107	1,024
Kangra	710	145	667

Cuningham remarks upon this, that it might be imagined that such tables of distribution are less in accordance with the facts of the case than with the defective character of the Indian statistics and of Indian diagnosis. But even if this be admitted, it by no means explains the remarkable differences that occur between the years 1874–75, and it is the same whether villages or garrison towns and their barracks are taken into consideration. In garrison towns and barracks the statistics and diagnosis of the disease are as reliable in India as in Europe.

Cuningham has investigated forty garrison towns in regard to certain points, commencing with Barrackpoor in Eastern Bengal, and extending through Upper Bengal to the North-western Provinces, and also as far as Central India and the Lower Punjaub, to which the epidemic of 1875 did not extend. In these forty places there were sixty-seven stations for troops, which suffered more or less from cholera, and each of which had its own hospital.

The first cases of the disease that occurred, and its introduction into these sixty-seven stations, supply no evidence in favour of its origin and dissemination by means of infected persons coming from infected places. It is undoubtedly stated in the reports, on more than one occasion, that the disease might have been introduced by direct or indirect communication with infected neighbourhoods by means of servants, coolies, and travellers, as well as by other means. No proof however is given, and it may be regarded as purely supposititious. Once or twice it is stated that a soldier entered his quarters after being in an infected place, and then fell ill; yet remained the only person affected. Thus one came from Udschan where the disease was prevalent, into Agar, where he sickened of cholera two days after his arrival; yet no other case occurred. A Sepoy from a Bombay regiment arrived on leave at Jubbulpoor on the 27th of August by railway. Even during the course of the journey he suffered from symptoms of the disease, and was taken into the hospital of the 16th Regt. Madras Native Infantry on the following day, placed in a separate hut, and then transferred into an adjoining tent. This remained the only case that occurred in the regiment; but a few days later cholera broke out in the village of Castinga, which was about three hundred yards off, and where ten cases occurred. Cuningham made an extensive but rapid journey through India, visiting several garrison towns, and among them Jubbulpoor, and found that this village of Castinga was situated on a small river which overflowed its banks as far as to the hospital. They sought at first to refer the cholera in Castinga to the persons affected who were treated in the hospital, on the view that the water of the river had been contaminated by the evacuations of the Sepoys which the attendants, instead of burying as they had been directed to do, had perhaps deposited on the banks; but positive facts are entirely absent, and it is, moreover, by no means established that the inhabitants of the village did not drink the water from wells excavated in the banks, and which at that time contained very foul water, rather than the water of the river. The town is described as being extremely dirty,—and further: we may imagine that the attendants had thrown out the cholera excreta upon the ground around the tent, and that the poisonous material might have then been washed into the river, and passed by filtration into the wells of the town. This however can only be regarded as a probability, and can by no means be absolutely proved.

But the evidence of the non-contagiosity of cholera is very different if we investigate the history of the attendants in the sixty-seven garrison hospitals. Cuningham, taking them in order gives in each instance the number of cholera patients treated in the hospital, and the number of nurses and personal attendants attacked by cholera. Of these sixty-seven hospitals, which all had cholera to treat, varying in number however from one to ninety-seven, only in eight hospitals did cholera cases occur amongst the personal attendants, whilst in fifty-nine cases the attendants remained perfectly free from disease.

In these eight cases the number of diseased attendants was as follows:—

In Fyzabad	1
Lucknow	1
Moradabad	2
Meerut	1
,,	1
,,	1
Muttra	2
Kasauli	3
Dharmsala	11

The only epidemic amongst the attendants, or house epidemic, occurred in the hospital of the first Ghoorka regiment in Dharmsala, where eight attendants, two letter-carriers, and one official were attacked; but if in fifty-nine out of sixty-seven hospitals the attendants were not attacked at all, and such a small number in seven others, scarcely any one would maintain that the eleven cases which occurred in the hospital at Dharmsala resulted from the reception of and attendance upon cholera cases. Why should not there be here and there a centre of infection in a hospital as well as in a barrack? Close investigation has however actually brought to light the highly important fact that the personal attendants in the hospital at Dharmsala were not attacked in any greater proportion than the population outside.

In a population of 1073 persons, 86 were attacked with cholera =8.01 per cent.

In the hospital service of 127 persons, 11 were attacked with cholera = 8·66 per cent.

There is consequently no difference between the number of those attacked amongst the soldiers in the barracks and of the attendants in the hospital into which the cholera patients were brought. In fact, the attendance upon and the accumulation of cholera patients in one house produces no particular increase of danger, providing the house itself be not a centre of infection, and even then the attendants are in no greater danger than are others in the infected localities, from which the patients have just been transferred to the hospital.

Cuningham also investigates the question as to whether the immunity of the attendants in hospitals may not perhaps be explained by special precautions being taken against infection —especially by disinfection; and shows by reference to older sources of information that the remarkable immunity of the attendants is nothing new in the history of cholera in India, but has always been observed, even in times when no disinfection was thought of. Amongst others, he adduces a statement made in the year 1848 by Dr. H. A. Bruce, who states, "I had in 1848 at Cawnpore cholera amongst the infantry from May to September. During the whole of this period I can truly say the hospital was never entirely free from sporadic cases, whilst at times it was filled to overflowing. The entire staff may be said to have lived in the wards; the coolies never left the beds of the patients for an hour together, the physicians were fully occupied with the treatment, and yet no single individual, whether European, half-caste, or native, exhibited the smallest symptom of cholera. I took particular care to collect them together, and to see after them, but during this year no single case occurred amongst them."

This report of the military hospital in Cawnpore in 1848 by Dr. Bruce closely resembles the reports of Dr. Vogel and Dr. Port in regard to the condition of the military hospital in Munich during the cholera epidemic of 1873–74. Port,[1] after stating that the attendants in the hospitals were more frequently attacked by typhus than by cholera, remarks, "that the observation that cholera patients are much less dangerous than those affected with typhus, has been made everywhere; it has also been proved by the experience of this military hospital during the last cholera epidemic, since none of the attendants were affected in the slightest degree with cholera." We can scarcely believe that this is ascribable to the circumstance that in the cholera cases the whole of the excreta were completely disinfected, whilst this was not so completely effected in the typhus cases In fact the sudden escape of the evacuations of cholera patients renders this impossible; they fall on the ground, upon the bedclothes, on the clothes of the attendants; and if they could everywhere else be rapidly removed, they would still remain in the latter place, because frequent changes of clothing of the attendants is neither possible nor convenient. The following example may be adduced. A cholera patient had so soaked his bed, that he really swam in rice-water evacuation, and in order to dry him, an attendant raised him, all saturated as he was, in his arms, whilst a second rapidly withdrew the bedclothes and replaced them with fresh linen. In the short time which this required the patient discharged, whilst in the arms of the attendant, some pints of fluid over his arms, trousers, stockings, and slippers. A few hours later the attendant was seen in the same dress, the dejections having dried on his clothes, and these must necessarily have been converted into dust by his movements, and have been inspired by himself *and those around him*, and yet no cholera case occurred. Such instances, though perhaps not quite so marked, unquestionably occur daily and hourly in every cholera hospital.

---

[1] Berichte der Cholera Commission des deutschen Reiches. Viertes Heft. S. 89

Cuningham mentions lastly that the peculiar immunity of the hospital attendants in the year 1875 is so much the more remarkable because other predisposing conditions, such as want of rest, irregular meals, anxiety and sorrow, and especially also the dread of infection, were by no means wanting.

In order to avoid being too diffuse, I shall pass over Cuningham's remarks regarding several other instances in which, although infection might have occurred, he shows the assumption that it did so to be untenable; regarding the want of sanitary arrangements and of proper drinking water (to which I shall draw special attention in discussing the American reports), and regarding the effects of movements on the outbreak of an epidemic which, when duly attended to, have proved very useful; and shall pass on to the subject of quarantine, or, speaking generally, to the limitation of intercourse, which is so interesting in a practical point of view.

In the year 1861 a special Commission, appointed by the Indian Government, issued an order directing what troops were to do in the event of an outbreak of cholera. Quarantine was not mentioned, but it was not expressly forbidden, and in consequence of the increasing belief in the contagiousness of cholera, practice became gradually diversified according to the views of physicians or commanding officers. In the year 1875 quarantine-like measures were sometimes enforced and sometimes neglected, in different bodies of troops and in various places. Cuningham took the opportunity of making a comparative estimate of the usefulness of the restraint and non-restraint system, and we shall here give very briefly the principal results at which he arrived. Obviously the plan of procedure, as no general orders were issued, was very different in different places. In many instances scarcely any restriction was offered to the freest possible intercourse. In three cases processions of pilgrims were turned aside; in others, cordons were drawn around the station in order to prevent the entrance of all persons suffering from cholera, and to cut off intercourse with affected places. In six stations only (Naugrug, Nagod, Chakrata, Kasauli, Dagshai, and Subathu) was an attempt made to carry out what might properly be called quarantine regulations. In these places natives who desired to enter were kept outside and under observation for from three to ten days, but even here it was impossible to prevent all communication; provisions and letters were forwarded as usual, though, in the greater number of cases, the provisions, post-bags, and letters were deposited at the barrier, and conveyed from place to place within the cordons by other people. In a few cases, as in Mooltan, Jullinder, and Hyderabad cordons were formed, although no cholera was in the vicinity. No cholera, indeed, occurred, but it would be absurd to refer the immunity of these stations to the cordons, since the population of the entire district experienced the same immunity without any protection of the kind. If these stations be not included, the cantonments of the presidency of Bengal, which lay within the epidemic area of 1875, may be divided into two great classes, namely, into those where no quarantine or other precautionary measures of this kind were practised, and others where such measures were more or less completely carried into effect. In the first of these categories were twenty-five places which are deserving of special mention; in none of these was any considerable proportion of persons affected, a few enjoyed complete immunity, and in others the disease was limited to a few cases. Allahabad was most affected, but even there only eleven cases occurred amongst the European troops, and sixteen amongst the native troops.

Amongst twenty-nine of the specially-mentioned garrisons in Bengal, in which outside communication was more or less strongly interdicted, twenty suffered from cholera. Thus in twenty out of twenty-nine places it is obvious that quarantine regulations and restrictions proved inadequate to prevent the introduction of cholera, and many of the patients suffered severely. It is remarkable, indeed, that the garrisons placed under quarantine suffered more severely than those without quarantine, and we might be disposed to believe either that it was a pure accident, or that the conditions and precautionary measures associated with the maintenance of quarantine are in themselves unfavourable to the maintenance of health. I am of opinion, however, that in neither of these can the same explanation of the fact be found, but that those garrisons which were placed under quarantine for the most part occupied districts where the cholera was generally more common and severe, and that the more violent outbreak of the disease in the vicinity led the commandants to adopt those measures of quarantine which appeared to be less needed in the districts where the epidemic was less severe. The general fact, therefore, still remains, that the disease cannot be excluded by quarantine.

On the other hand, the immunity from cholera of nine garrisons under quarantine cannot be ascribed to the protective influence of the quarantine, for they were either in situations which had previously suffered little or not at all from cholera, or there were other garrisons in the immediate neighbourhood which were permitted to have the freest intercourse, and still remained free from cholera. Futtighur was the only one which can be adduced in favour of quarantine, since the neighbouring region was strongly affected by cholera in the year 1875. But here also—quite independently of the incomplete manner in which the quarantine was carried out—the earlier history of the garrison presented a very remarkable fact. The district is undoubtedly very liable to cholera, but during the fifteen years from 1860 to 1874, only eighteen cases occurred amongst the European troops, namely, one in 1860, eleven in 1861, one in 1866, and five women and children in 1872. Amongst the native troops, within nine years, from 1866 to 1874, only one single case occurred, and this was in the great epidemic of the year 1869. No importance can therefore be attributed to the efficacy of the quarantine in Futtighur.

It is hence only too evident that the garrisons and barracks in

India behave in the same way in reference to cholera as our own. If, for example, the Munich garrison had been confined to the Salzstadel and Max II. barracks during the epidemic that raged from July, 1873, to April, 1874, and if these barracks had been surrounded by a cordon, we might attribute the immunity which they exhibited to the cordon and the quarantine; but the Turken, the Hofgarten, and the Isar barracks were just as little protected by the quarantine as the twenty Indian garrisons which were affected, notwithstanding the maintenance of quarantine regulations.

In accordance with the statistics which Dr. Bryden has obtained, with wonderful regularity, for the whole of the troops in India for a long series of years, Cuningham insists on the uselessness of those quarantine and isolation measures which refer not to the cholera locality, but only to patients suffering from cholera, and ultimately states what he regards as effective against the cholera, and what is to be learnt from the facts before us. I give the conclusion of his report, in which he states his view in regard to the fundamental prophylactic principle, that infected places should be avoided, and also in which he gives a review of the most important general facts that may be drawn from the epidemic of the year 1875, and lastly, in which he refers these facts to their causes :—

"1. In the preceding remarks no reference has been made to the precaution which was generally adopted of placing bazaars, or towns and villages, in which cholera was reported to exist, out of bounds to the troops. This is quite in accordance with the rules which have been prescribed in G.O.C.C., 193, dated 3rd August, 1870. To visit a locality where cholera exists is to expose oneself to the causes producing the disease in that locality. This principle, the importance of locality, is enforced by all the facts of the epidemic.

"2. Stated shortly, these facts may be summarised in the following propositions: cholera, which is always more or less present in the lower provinces of Bengal, was singularly dormant over parts of the country in 1874; in 1875, on the other hand, it was not only very severe in these lower provinces, but extended widely over the peninsula, generally diminishing in violence as it neared the limits of the area which it covered;

widely as it extended, there were marked tracts of exemption, notably part of the Central Provinces and the Upper Punjaub. The areas of prevalence bear no relation to the facilities for communication, nor those of exemption to the want of such facilities; within the epidemic area the villages attacked nearly always formed but a small proportion of the whole, and even in those districts where the disease was most severe, many of them escaped. In the sixty-seven communities in which the disease appeared, and the facts regarding which have been reported by sixty-six medical officers, there is no evidence that the disease was due to importation; in these sixty-seven communities the attendants on the sick did not suffer more than others; removal from the affected locality was generally attended with excellent results in checking the disease, and all attempts to exclude cholera by means of guards and sentries and quarantine failed.

"3. If effects are to be taken as evidence of the causes which produce them, then it follows that the causes of cholera, which are always more or less prevalent in the lower provinces of Bengal, were singularly dormant over other parts of the country in 1874; that in 1875 these causes were not only intensified in these lower provinces, but extended widely over the peninsula, generally diminishing in force as they neared the limits of the area which the epidemic covered; that these causes were not present in certain areas, notably in part of the Central Provinces and in the Upper Punjaub; that the presence or absence of these causes was in no way dependent on the facilities or difficulties of communication; that even within the epidemic area these causes were in most parts localised in a small proportion of the villages of each district; that even where the disease was most severe they left a large number of the villages unaffected by them; that removal from the locality where these causes were at work was attended by great benefit in many instances, but that in others the benefit was doubtful, because apparently the movement had been made into another locality where these same causes existed; that these causes cannot be arrested by guards and cordons; and that attendance on the sick does not spread the disease. The whole history of the epidemic in fact points to the danger of locality; to a cause or causes which, though spread over a large area, become in some way localised in certain quarters within that area. What these local cholera and other diseased causes are, must be the subject of further investigation, and their removal the aim of all practical sanitary action."

These fundamental propositions, which have originated in a careful and systematic study of the facts, continued uninterruptedly for many years in India, the home of cholera, may be truly applied to all epidemics of cholera wherever they may occur, and consequently also to the last cholera epidemic of 1873 in North America. I shall now, therefore, refer more particularly to this official report, and I hope to show in what direction the ætiology and prophylaxis of cholera must be followed out. Perhaps we shall ultimately be successful in gaining a firm, though somewhat irregular and uneven, basis of facts, on which we can rest with certainty, to continue our work and extend our knowledge, and therewith our power of good.

II.

The American Report.—The voluminous work entitled, *The Cholera Epidemic of the Year* 1873 *in the United States* (Washington: Government Printing House, 1875), which has been printed at the cost of the United States, presents a strong contrast with these East Indian cholera reports. The work consists of four divisions.

I. *The Introduction of the Cholera into the United States through Merchant Ships. Means of Protection.* By John M. Woodworth, M.D., Supervising Surgeon, United States Marine Hospital Service.

II. *The History of the Cholera Epidemic of* 1873 in the United States. By Ely MacClellan, M.D., Assistant-Surgeon, United States of America.

III. *The History of the Progress of the Asiatic Cholera.* By John C. Peters, M.D., New York, and by Ely MacClellan, M.D., Assistant-Surgeon, United States of America.

IV. *The Bibliography of Cholera.* By John S. Billings, M.D., Assistant-Surgeon, United States of America.

Dr. Woodworth appears as the leading person in this department in Washington, as Dr. Cuningham is in Calcutta. Like him, Dr. Woodworth lays down certain propositions, and, which is perhaps not quite accidental, the same number of nine. The nine American propositions I place in opposition to the nine Indian propositions.

"1. Malignant cholera is caused by the access of a specific organic poison to the alimentary canal, which poison is developed spontaneously only in certain parts of India (Hindostan).

"2. This poison is contained primarily, so far as the world outside of Hindostan is concerned, in the ejections—vomit, stools, and urine—of a person already infected with the disease.

"3. To set up anew the action of the poison, a certain period of incubation, with the presence of alkaline moisture, is required, which period is completed in from one to three days; a temperature favouring decomposition, and moisture or fluid of decided alkaline reaction hastening the process, the reverse retarding.

"4. Favourable conditions for the growth of the poison are found, *a*, in ordinary potable water, containing nitrogenous organic impurities, alkaline carbonates, &c.; *b*, in decomposing animal and vegetable matter possessing alkaline reaction; *c*, in the alkaline contents of the intestinal portion of the alimentary canal.

"5. The period of morbific activity of the poison—which lasts under favourable conditions for about three days for a given crop—is characterised by the presence of bacteria, which appear at the end of the period of incubation, and disappear at the end of the period of morbific activity. That is to say, a cholera ejection, or material containing such, is harmless both before the appearance and after the disappearance of bacteria, but is actively poisonous during their presence. (N.B.—It is not meant by this that the bacteria so found are the cholera poison, since they differ in no appreciable manner from bacteria found in a variety of other fluids. Indeed, Lebert hints that the bacteria may even be the destroyers of the poison.)

"6. The morbific properties of the poison may be preserved *in posse* for an indefinite period in cholera ejections, dried during the period of incubation, or of infection matter dried during the period of activity.

"7. The dried particles of cholera-poison may be carried in clothing, bedding, &c., to any distance, and when liberated may find their way direct to the alimentary canal, through the medium of the air—by entering the mouth and nose, and being swallowed with the saliva—or, less directly, through the medium of the water or food in which they have lodged.

"8. The poison is destroyed naturally, either by the process of growth or by contact with acids :—*a*, those contained in water or soil ; *b*, acid gases in the atmosphere ; *c*, the acid secretion of the stomach.

"9. It may also be destroyed artificially :—*a*, by treating the cholera ejections, or material containing them, with acids ; *b*, by such acid (gaseous) treatment of contaminated atmosphere ; *c*, by establishing an acid diathesis of the system in one who has received the poison."

Dr. Woodworth introduces his nine propositions with the promising observation, "That no attempt is made in this summary to decide questions which are still *sub judice*, to discuss more theories, or to trace the various phases through which the distractingly confusing history of the disease has passed. On the contrary, what is here offered is simply a series of propositions condensed from the vast mass of cumulative evidence which has been laboriously collected by a multitude of cholera students in both hemispheres."

Whoever institutes a comparison between the nine propositions of Cuningham and those of Woodworth, will find that it is impossible to express more sharply the opposite views of the endemic origin, and the origin by contagion, of cholera ; and the time appears to me to have arrived when the weaker of the two theories must yield to the other. It is necessary that a decided view on the subject should be taken, since the subject is one that affects all mankind.

At the bedside the physician stands alone and is independent, and if he knows what is right, he can do it at once, but it is different with the general hygienic part of medicine, with the business of public health, which has this in common with politics and political economy, that any individual may raise or discuss a question, but he is unable to act by himself, so that no progress is possible until a large number of persons having power to act come to hold similar views. As long as the greater number continue to hold a false view, everything is at a standstill, all the efforts of particular observers prove unserviceable, and a further development only occurs when a large number have been brought over to correct views, which then always appears to be the result of a spontaneous movement, and which frequently in a short time and noiselessly effects a complete alteration in the prevailing practice.

I believe the first part of these observations to have made it sufficiently apparent how Cuningham has been led to hold his nine propositions, and to have shown upon what observations and researches they rest.

Woodworth bases his views essentially upon the contents of the second part of the great work on cholera, upon the report of McClellan, which treats of the clinical history of the cholera epidemic of 1873 in the first chapter, the ætiology of cholera, in the second chapter, and the prophylaxis of cholera, in the third chapter. The fourth chapter, by Dr. Peter, refers to the origin and dissemination of the epidemic of Asiatic cholera, which reached the United States in 1873. The fifth and last chapter, which is a very long one, extending from page 91 to 513, contains, arranged in an orderly manner, according to the several States, the whole of the reports of the American physicians upon the cholera of 1873.

It will not be without interest if we make a few observations upon the history of the production of this extensive work. On 25th March, 1874, a decision of the Congress at Washington directed that a military physician should be charged with the duty of reporting upon the causes of epidemic cholera.

On 7th May, 1874, Dr. McClellan was selected by the Surgeon-General, Dr. Barnes, to visit the towns attacked in the States of Louisiana, Mississippi, Alabama, Arkansas, Tennessee, Kentucky, Missouri, Illinois, Indiana, Ohio, West Virginia, Pennsylvania, Iowa, and Minnesota, in order to ascertain as completely as possible all the facts bearing upon the introduction and dissemination of the disease; "to confer with the health authorities and resident physicians of such towns, and collect, so far as possible, all facts of importance with regard to such epidemic, and shall make a detailed report of the information collected to this office." The work was to be completed at the end of the year.

Coincidently, similar directions were given by the Finance Minister to Dr. Woodworth as Supervising Surgeon of the Merchant Marine Hospital Service.

Both gentlemen undertook this gigantic duty, and McClellan remarks on page v :—

" This makes a grand total of two hundred and sixty-four infected localities, from which information should be obtained. The total number of days allotted to the work was two hundred and thirty eight. It was therefore a matter of physical impossibility to accomplish the task by personal inspection alone. At many points—as the cities of New Orleans, Memphis, Nashville, Cincinnati, Chicago, and St. Louis—the work demanded patient investigation and careful study; it therefore became necessary to issue certain circulars, and by dint of unceasing correspondence through their use, much valuable information has been collected," &c.

These circulars show, as McClellan states, that he had often to write a second, and even a third time, to obtain the required report. A set of blank forms were forwarded, the first requesting that a complete list of all cholera cases which had come under the correspondent's care during the past year should be sent—those who recovered, as well as those who died; and further, that the correspondent should embody in a note any valuable information he might have obtained of the epidemic, such as the history of the early cases, the history of groups of cases occurring in one house, or in public institutions, and any facts which he might possess of the mode by which the disease in question was introduced into the locality.

In a second circular (1st Monition), Dr. McClellan urged the necessity of an early answer to his former letter, with a request that an account might be given by the correspondent of the disease as he witnessed it, with a description of any local influences which may have favoured the spread of the disease, the source and character of the water-supply, &c., since this would demand but little time and labour, and would enable Dr. McClellan to complete the chain of evidence, whilst neglect would cause a gap which could not be filled. A note was added, that every contribution would be fully acknowledged.

And in point of fact the report of Woodworth was actually sent in to the Minister of Finance on the 30th of December, 1874, and on the 1st January, 1875, the report of McClellan was forwarded to the physician-in-chief, who handed it in to the War Minister on the 2nd January, 1875, by whom it was delivered on the 11th to President Grant. It was printed on 13th January, 1875.

No time was lost in the preparation of the report, but much delay appears to have taken place in the printing, since the report was not issued till the spring of 1876.

However much Messrs. Woodworth and McClellan have been praised by the Finance and War Ministers in Washington, and these by the President, for having completed so large a work, containing more than 1,000 pages, in such an inconceivably short period, it has still to be brought before another judgment-seat, that, namely, of scientific criticism, where the question is not in what space of time a book can be written, but how far the information which is supplied can be depended upon.

The nine propositions at the head of the report afford grounds for believing that the enigma of cholera, and of its dissemination, has been so far solved, that a practical application of the knowledge attained may be made, and that the disease for the future might be excluded from America. In the background are severe measures bearing on national intercommunication, the introduction of which would cost as many millions as some wars, and before entering into such wars it is customary to ask whether a victory may be hoped for, and whether at least one be possible.

Let us confine ourselves in the first place to the mere fact of possibility. This might occur theoretically if the nine propositions of Woodworth were true, but the greater part of them are not only not true, but not even probable; whilst not one single one of them can be regarded as absolutely proved. The proof which is so requisite is of two kinds, first, general, and second, special to each proposition.

If the nine propositions of Woodworth be true, those of Cuningham are false; if Woodworth be correct, then the cholera must spread not only in America, but also in India, from the sick by infection and from place to place by intercommunication. But that the disease does not extend from the sick to the healthy is not only proved by the relative immunity of the personal attendants in the cholera hospitals of India, but is otherwise demonstrated by other and well-observed facts; I would refer, amongst others, to my report upon the cholera in prisons, which has been translated into English, as a part of the report of the Cholera Commission of Germany, and the study of which I recommend to the Americans.[1]

Whoever accepts the contagionistic standpoint of the American Cholera Report must not hesitate to admit also the consequences of this acceptance in regard to the course of epidemics; he must, in the first instance, especially demonstrate that local epidemics regularly and preferentially select the principal lines of intercourse. But whoever investigates this point thoroughly will find the exact opposite to occur. I began in 1854 to investigate the cholera epidemics in Bavaria in regard to this point.[2] Railways, public roads, and river traffic offer peculiar opportunities in this respect, and in America abundant opportunity existed for this kind of research. But a superficial investigation, which out of a series of facts selects only those which are in harmony with a preconceived opinion, is insufficient, and the various lines of intercourse must be regarded as a connected and continuous whole. To this whole belong not only the places in which the cholera appeared, but also all those in which, in spite of the same means of intercourse, it either did not appear at all, or only to a small extent. As soon, however, as we investigate any large system of communication in this way, a result is obtained which is entirely opposed to a contagionistic view.

Thus Dr. Cornish, the Sanitary Commissioner of the Madras Presidency, in his report for the year 1871 has appended a large map, in which the railway communications of this part of India, and at the same time the distribution of the cholera epidemics, are visible. It is astonishing how the railway often runs through long tracts of country where cholera either did not appear at all, or only to a slight extent, whilst districts which lie far removed from the principal lines of communication, were very severely attacked. Cuningham has shown the same thing in his last report for the whole of India.

---

[1] *Outbreak of Cholera among Convicts. An Ætiological Study of the Influence of Dwelling, Food, Drinking-water, Occupation, Age, State of Health, and Intercourse, &c.* With Eight Lithographic Tables. Berlin: Carl Heymann's Verlag, 1876.

[2] See the Report of 1854 on the Cholera Epidemic in Bavaria. Munich, 1857. Cotta's Library, p. 304.

Outside India it is the same as in India, as the third volume, just completed, of the report of the Cholera Commissioners in Germany shows. Dr. Günther, one of the Commissioners, in speaking of the epidemic of cholera in Saxony in 1873, refers to all the cholera epidemics from which Saxony has suffered since 1831, when the cholera became known in Europe. Since this period Saxony has had cholera epidemics in seven separate years, and since 1831 the railway system has gradually been constructed in Saxony. No part of Germany is so densely populated, and none is at the present time so thoroughly traversed by railways as Saxony. At the time of the first invasion of Europe by cholera, 1831-37, Saxony had scarcely any railways, at the time of the second, 1848-57, they were in process of construction, and during the third, 1865-74, they had been completed. Günther shows that the dissemination of the local epidemics in the several epidemic years had no relation whatever to the increase or the direction of the several railways, and arrives at the conclusion, p. 98, that "the epidemic dissemination of cholera in Saxony does not stand in relation to the extension of the railway system."

The same result is obtained by a careful investigation of the communication by water. Since the year 1817 it has been observed that cholera epidemics exhibit a decided preference for certain river districts at certain times. The dissemination of cholera has consequently not only been referred to human intercourse along the banks of the Ganges, as well as those of the Vistula, the Oder, the Elbe, the Danube, or the Rhine; but closer investigation has shown that cholera epidemics are developed preferentially in the vicinity of rivers and other watercourses, even when these are not means of communication, and on which neither ships nor rafts are conveyed.

This leads us gradually to the conviction that river territories are not means of communication, but drainage districts. I have also investigated, from this point of view, the local epidemics that occurred in Bavaria in 1854.[1] Dr. Reinhard, president of the National Medical College of Saxony, had done the same for the kingdom of Saxony. Reinhard has described, in the Fourth Yearly Report of the National Medical College upon the Condition of Medicine in the Kingdom of Saxony,[2] all the cholera epidemics that have occurred since 1832 in Saxony, distributed according to their locality, and has constructed a map, in which he shows that they in every case affect certain districts, whilst other parts in the immediate neighbourhood of these districts, with which they stand in the most intimate and uninterrupted intercourse, enjoy perfect immunity. How great is the difference between the western and eastern districts, and the interior of Saxony! Reinhard, indeed, believes that the causes of this extremely unequal distribution must be sought rather in the geognostic and physical relations of the soil, which are undoubtedly essential, than in the river districts; but it is impossible to examine his map without observing how the epidemically affected districts form certain regions along river-valleys, as, for example, on the Mulde in Zwickau, Glauchau, and Meerane, on the Pleisse and Elster in Leipsic, and the surrounding district, and that it extends much more along than across the river valleys. I have discussed this longitudinal implication of the drainage region at greater length in my *Hauptberichte über die Cholera* in 1854 in Bavaria, and Günther has also shown that in the case of Saxony the gradual extension of the railway system has not modified it.

Moreover in America the influence of certain river and drainage regions upon the course of the cholera in 1873 cannot be overlooked, and McClellan has allowed the finest opportunity of instituting profound investigations, which might have given the most decisive results in regard to river territories, to escape him.

These are general facts which must be taken into account if the theory is not to be false from the very beginning, but the contagionists can either give no explanation of these facts or leave them out of sight altogether; whilst the localists constantly admit, and know how to value, the influence of intercourse on the dissemination of cholera. I have certainly required more than 238 days to get the connection between the influence of intercourse and of locality so far clear to myself that I could dispense with the excreta of cholera patients. As soon, however, as it is admitted that a cholera locality, and not the cholera patient in Europe and America, as well as in Hindostan, must first produce the cholera poison before it can be disseminated by intercourse, and that wherever it is disseminated it again requires certain local conditions in order to develop to the dimensions of an epidemic; and further, that human beings do not constitute the soil requisite for its increase, the nine propositions of Woodworth at once fall to the ground, and none of those who are of my opinion can cherish the slightest hope that by adopting them any place can be protected from cholera in America or Europe, unless every kind of intercourse with Asia is given up for so long a period as to effect the purification of man from the cholera germs which he temporarily carries with him, whilst there are no other means at our command than the isolation and disinfection of the cholera patients. The complete arrest of all intercourse would likewise have, upon the whole, more disadvantageous consequences than the occurrence of a cholera epidemic here and there.

---

[1] See *Hauptbericht*, p. 310.

[2] *Dresden in Commission.* By C. Heinrich, 1874, p. 142.

The nine propositions of Woodworth are collectively untenable when confronted with the few general facts which I have adduced, and which instead of being altered by further research are, on the contrary, constantly receiving fresh support the more carefully they are examined. But even if these facts were not already known, Woodworth's nine propositions could not be accepted, because not one of them can be regarded as satisfactorily established. McClellan, in his second chapter,[1] certainly makes an attempt to support the nine propositions of Woodworth by seven propositions of his own, but the attempt will certainly appear unsatisfactory to all who have closely investigated the subject of cholera. Woodworth does not take any further trouble to establish the facts on a sure foundation, but simply enunciates the propositions and refers to the report, stating that McClellan has done it admirably, though in the whole report nothing having even the appearance of a proof of the nine propositions can be discovered. I shall proceed to discuss the seven propositions of McClellan *seriatim.*

---

[1] *Etiology of Cholera*, pp. 36, 74.

First Proposition.

Asiatic cholera is an infectious disease resulting from an organic poison, which, gaining entrance into the alimentary canal, acts primarily upon, and destroys, the intestinal epithelium.

McClellan allows that no special cholera poison has as yet been discovered, but he is disposed to admit its existence from the pathological appearances presented on *post-mortem* examinations. We could do this in all diseases, though they may not in any instance be occasioned by a specific organic poison. In every case of diarrhœa, whether produced by chill or by subcutaneous injection of croton oil, or by section of certain nerves, since peculiar pathological conditions of the intestine are produced, might we not legitimately conclude in each of these cases that a specific organic poison had been introduced into the alimentary canal? All the symptoms of cholera may be produced by arsenious acid. As Virchow has incontestably shown, the symptoms of disease and of death by arsenic and by cholera are so similar that a poisoner in Magdeburg effected a series of murders during a cholera epidemic. The patient in each instance was correctly treated for cholera and duly interred. It was only when some life insurance offices remarked that the lives of a number of those who had died from cholera had been shortly before somewhat highly insured by one and the same person, that the bodies were exhumed, arsenic discovered in them, and the malefactor brought to justice. I was acquainted with an analogous case, which occurred during the epidemic in 1854 in Bavaria. McClellan cites the results of *post-mortem* examinations made by Macnamara in Calcutta, by Dr. Hayem in Paris, and by Dr. Miller in Chicago, though none of these gentlemen discovered the cholera poison itself, but only the well-known pathological appearances of cholera. This constitutes the entire evidence of the existence of a specific organic poison introduced into the alimentary canal.

Second Proposition.

The active agents in the distribution of the cholera poison are the dejections of persons suffering from the disease in any of its stages. That in these dejections there exists an organic matter, which, at a certain stage of decomposition, is capable of reproducing the disease in the human organism to which it has gained access.

McClellan adduces the fact that in the rice-water evacuations Thudichum found vibriones, and many others butyric acid, and that Macnamara observed it to have an alkaline reaction, and to contain various kinds of indeterminate particles. He (Macnamara) believes that these molecular masses are peculiar to cholera, and that having gained entrance into the intestines of man they are capable of producing processes similar to those by which they have been themselves produced. The violent symptoms of cholera do not appear to him to be explicable in any other way. Resting on this important discovery of Macnamara, McClellan goes still further, remarking, "It is therefore from this molecular matter in the vibrionic stage of decomposition, and not from the vibriones themselves, that the dejecta of cholera patients are capable of setting up a morbid action in the intestinal canal of those who may receive it."

McClellan further states that a cholera evacuation, diluted with water and exposed to the sun, exhibits, after a short time, vibriones, which again after a certain time disappear, and he believes that he has thus given sufficient support to the fifth proposition of Woodworth. But the same may be said of the evacuations even of perfectly healthy men.

He then passes on to the researches on infection made by Thiersch, Burdon-Sanderson, Popoff, and others, but forgets to mention that no animal has hitherto been discovered which, under similar circumstances, sickens like man, with symptoms of cholera during a cholera epidemic; or that cholera epizootics never occur amongst animals when cholera epidemics occur amongst men. The well-known researches of Thiersch and Sanderson on mice have been explained by facts ascertained during the last cholera epidemic, 1873-1874, in Munich, by Heinrich Ranke, showing that the mouse remains healthy so long as cholera stools are given to it, whatever may be the stage of decomposition, and even when containing vibriones, but that it became sick and died when strips of paper steeped in cholera stools were given to it to gnaw; but unfortunately the same effect follows if the strips of paper are given to the animal to eat without being dipped in the cholera evacuation. The mice experimented on by Thiersch and Sanderson appear also to have died rather from the paper they ate, than from the cholera stools.[1]

The animals maltreated in various ways by Högyes in Pesth also scarcely had cholera, for it is inconceivable why, for example, if the dogs were generally disposed for cholera, they should not be constantly affected in the cholera epidemics of man, with whom they so frequently live together, and eat, and even consume the same drinking water, independently of the circumstance that they lap water from every puddle. The numerous and carefully-conducted experiments upon infection made by Lewis and Cuningham[2] in Calcutta, have sufficiently demonstrated that cholera cannot be communicated to dogs by cholera dejecta; but McClellan has no hesitation in citing these experiments as being in his favour, though his opinion is in direct opposition to that of both inquirers.

The experiments on infection made by Macnamara with drinking water and cholera dejecta in man, I shall refer to in the chapter on drinking-water (Proposition 5).

The term contagion is now applied to any infectious material which, contained in the secretions of the sick, can be transmitted by inoculation to the healthy. This proof has never been furnished for the infectious material of cholera in the same way as it can be so easily demonstrated, for example, in splenic fever, in small-pox, &c. That cholera from cholera patients and from the bodies of those who have died from cholera cannot be communicated to animals by inoculation, may be to some extent explained by the fact that no animal has hitherto been found which is liable to cholera. But even men, who are undoubtedly liable or disposed to cholera, are incapable of being inoculated by the secretion of cholera patients. Such inoculations have not, indeed, been experimentally performed on men, but have not unfrequently occurred accidentally. Physicians and attendants on cholera patients do not suffer any more in an epidemic than others who have nothing to do with the sick, and further, the *post-mortem* examination of cholera subjects are remarkably free from danger. How often do the attendants on cholera patients come into contact with them under circumstances which expose them to the same chances of infection as those who work on the skin or the hair of an animal dying from splenic fever. The autopsy of an animal that has died from a contagious disease, such as, for example, splenic fever, exposes the operator to the greatest possible danger; the smallest scratch on the skin of the finger or hand frequently, if not constantly, produces infection. But how many cholera subjects are submitted to examination after death during cholera epidemics in hospitals, pathological institutes, and in dissecting-rooms without any special precaution, and even with cut fingers, and yet how perfectly free from danger it is for the dissectors. In Munich and other places the personal attendants on dissections and on the dead are so remarkably slightly affected by cholera that it might be supposed the exposure to this infectious material is a protection and not a danger. If here and there one such person is affected, we have no right in such an exceptional case to refer this to infection communicated from the dead, but we must admit that such a case has originated like others, where those attacked have had nothing to do with the bodies of those who have died from cholera. It is illogical to seek for a causative connection from the bare coincidence of two facts when this coincidence is not the rule, but the exception. Such accidental coincidences are not unfrequently termed positive facts, and it is said that one positive fact is of more value than a thousand negative ones; but the infection by means of the bodies of cholera patients has not in these cases been positively demonstrated, but the only thing that is positive is the accidental coincidence of the two events with the preconceived opinion which is to be proved.

---

[1] "Cholerainfectionsversuche an weissen Mäusen. V. Dr. Heinrich Ranke. *Aerztliches Intelligenz blatt*, 1874, München, bei J. A. Finsterlin.

[2] Report of Microscopical and Physiological Researches into the Nature of the Agent or Agents Producing Cholera. First and Second Series. By Lewis and Cuningham. Calcutta, 1872 and 1874.

(*To be continued.*)

THE PRACTITIONER.

MARCH, 1877.

Original Communications.

THE USES OF PEPSIN IN MEDICINE, AND ITS PREPARATION.

BY OSCAR LIEBREICH, M.D.,

Professor of Therapeutics in the University of Berlin.

PHYSICIANS are now falling more and more into the habit of employing in practical therapeutics those substances which are produced in the healthy organs for effecting digestion. Amongst these pepsin must always preserve the most important position, because others, such as pancreatic juice, bile, &c., must, when administered by the mouth, pass through the stomach, which by its acid secretions modifies or destroys their efficacy as ferments.

There have been some attempts to employ the peptones as therapeutical digestive agents. These are, however, open to very serious objections, and have great disadvantages, by reason of the readiness with which they decompose into those very disagreeable substances, leucine and tyrosine. It is unnecessary to speak of their very disagreeable physical character; these products of the decomposition of the peptones are incapable of supporting the nutrition of the body; and as the object of the administration of the peptones is to make them readily available for such absorption, the promptitude with which they enter on the stage of decomposition is a very serious drawback. There is also great difficulty in preparing them in a state of purity: and even if this be successfully achieved, I believe it would still be much better to entrust the work of preparing the peptones to the stomach, and aid it in the task, when necessary, by the administration of pepsin.

I believe that the field of usefulness of pepsin in practical therapeutics is very great; and that it may be still further extended with very great advantage. But the success of this remedy has been greatly hindered, and the result of clinical and of scientific experiment as to the results which may be obtained have been much confused by the number of comparatively worthless preparations which have been employed, and by the instability and uncertainty of some of those preparations, which in their most active states have from time to time yielded excellent results, and have thus attained a good reputation. The uncertainty of a potent remedy is almost as injurious and even more misleading than the inertness of a popular remedy, and the treatment of disorders of the digestion by pepsin has suffered greatly from both these drawbacks and from both these sources of fallacy.

Besides the cases of obviously defective and imperfect digestion, in which the use of an effective and reliable form of pepsin is directly and clearly indicated, there are various classes of disease in which the nature of the malady tends to produce imperfect digestion; and in which this defective digestion reacts so as to intensify the disease, by impairing the general nutrition of the body. Here pepsin may often be employed to break the vicious circle, and by artificially restoring the digestion and improving the nutrition, to facilitate the introduction and reaction of remedies, or otherwise assist in the process of recovery. Thus in chlorosis digestion always suffers; the blood not being in a healthy state, the deficiency of blood-globules prevents the healthy hyperæmia of the stomach, which should result from the stimulus of food; the nutrition of the blood is injuriously affected, and the chlorosis is aggravated. It is found in practice that, as we would anticipate physiological observation from the administration of an effectual preparation of pepsin, by breaking the vicious circle, it becomes a powerful agent in the cure of chlorosis.

The process of cure of chlorosis by preparations of iron is not always, I believe, if indeed it is at all, that which it is commonly held to be. The quantity of iron contained in ordinary well-arranged dietaries is sufficient and more than sufficient to supply the wants of the blood and the tissues. The doses of iron which are administered therapeutically are of course enormously in excess of what is required for the purposes of absorption and nutrition. We have in chlorosis a relaxed and atonic state of the intestines, and absorption goes on imperfectly. The effect of the various preparations of iron is to astringe and give tone to the intestinal coats, and by this action to facilitate the processes of digestion and intestinal absorption. For this purpose iron has a more advantageous action than the bitter tonics, because its action is more extensive on the intestinal tract, and less easily destroyed and neutralised by the preliminary influence of the gastric juices.

Thus also in the exhaustion succeeding typhus, measles, and other debilitating diseases, the inanition is due to the impoverishment of the blood, and to the defective power of digestion. Hence it is necessary to administer food with great precautions. Strength is slowly recovered; and any excess of diet is punished by symptoms of dyspepsia. The condition is one of anæmia, and to this is due defective digestion. Pepsin may be employed in the convalescence from all exhausting diseases with excellent effect. It facilitates nutrition, and at the same time directly quickens the restoration of natural digestive power.

Without dwelling upon this class of cases, of which the varieties will at once suggest themselves to the practitioner, I would refer to another series of cases, those in which imperfect digestion has been for a time successfully stimulated by the use of irritating condiments, pepper, mustard, vinegar, curry, or by the use of alcohol. Here the digestive powers presently become enfeebled, and do not respond to the peptic stimulus. These cases are of very ordinary occurrence in practice. The food remains in the stomach, and after undergoing only a partial digestion, enters one stage of putrefaction. In such cases, if vomiting occurs, it will be found that the matters vomited are of foul odour and alkaline reaction. So when children, after over-eating, vomit from indigestion, the matters ejected are of bad odour and evidently semi-putrid. On the other hand, when vomiting occurs during healthy digestion, as in sea-sickness, the contents of the stomach are acid, and have no putrid odour. The ordinary symptoms of this kind of dyspepsia are depression of spirits, flatulence, foul evacuations, headache, distension after eating. In a great many cases the diarrhœa of children is due to defective digestion by the stomach; the imperfectly-digested and partially putrefying mass of food gives rise to irritating substances, which produce intestinal diarrhœa by reflex irritation transmitted from the nerves of the stomach. The occurrence of diarrhœa from this kind of reflex irritation may be illustrated by the well-known and prompt purgative action which is often found to follow the drinking of a glass of cold water in the morning before food. The water has not any inherent or direct purgative action, but it produces peristaltic action by the reflex transmission of the impression produced on the mucous membrane of the stomach. In all the above cases the use of pepsin is strongly indicated, and for the prompt and happy cure of this class of infant diarrhœa, which is often found to be very intractable to remedies, I know of nothing which is better worthy of trial than pepsin.

There are certain counter-indications of the use of pepsin, to which it may be well to refer. Among them are carcinoma and ulceration of the stomach. Where there is an ulcer of the stomach, it is an object of treatment to afford a smooth covering to the ulcer by bismuth, or by the administration of nitrate of silver; to administer pepsin is to incur the risk of hastening the process of thinning, which there is already too much reason to fear from the action of the normal pepsin of the stomach.

To fulfil the therapeutical indications of pepsin it is, however, necessary to have a pure and reliable pepsin. There are various methods of obtaining article. Thus there is the method of Brücke, by treating the gastric juice (obtained by well-known methods) with a solution of cholesterine in ether; the cholesterine being precipated, enters into mechanical combination with the pepsin, and pure pepsin is obtained by removing the cholesterine by the further addition of ether.

This form of dry pepsin is absolutely pure, and from it may be learnt the qualities and powers of pepsin. But the method is too costly for general use, and its advantages are mainly for scientific purposes. There are various dry preparations of pepsin in powder and cake, which are well known, and, I believe, much used in medicine. But these preparations are very far from stable or reliable, and however active some of them may be when perfectly fresh, they do not remain active, and a large part of the pepsin powders prescribed are absolutely inert. Pepsin, although an albuminoid, differs among other things from ordinary albumen in being soluble in diluted alcohol. Advantage has been taken of this to prepare "pepsin wines;" but the alcohol does not prevent the ferment from undergoing change, and if a "pepsin wine" be examined after some time it will be found not to contain a trace of pepsin, and to be absolutely devoid of digestive power. I have found, many years ago, that to preserve the ferment of pepsin there is only one reliable agent, that is glycerine, the powerful preserver of vaccine matter and other animal ferments. My first researches on this subject, made many years ago, have been amply confirmed by a great number of observations, and for all scientific experiments on digestion, I have now for many years employed only these solutions. I strongly recommend practitioners for all therapeutical purposes to employ such a solution. In this way they will avoid the fallacies and disappointments due to the employment of deceptive and unequal preparations, and they will the more readily define the true limits of pepsin as a therapeutic agent, and its place in the armoury of medicine. It is not to be reckoned among the most powerful and heroic remedies, but it is one which is of very agreeable and efficacious action; which very frequently gives exceedingly good results in large classes of ordinary and troublesome complaints, and which may be employed with confidence and advantage when its powers are stable and reliable.

A CASE OF ACUTE MANIA TREATED WITH LARGE DOSES OF HYOSCYAMIA, DATURINE, ATROPIA, AND ETHYL-ATROPIA.

BY SYDNEY RINGER, M.D.,

Professor of Therapeutics at University College; and

J. S. BURY,

Physician's Assistant at University College Hospital.

Dr. Robert Lawson, of the Wakefield Lunatic Asylum, in a valuable paper published in the *Practitioner*, recommends the employment of large doses of hyoscyamia in various forms of insanity. A case of acute mania being admitted under our care, and after large doses of opium had failed to produce sleep, we determined to try this drug. We also compared the effects of hyoscyamia with those of atropia, daturine, and ethyl-atropia, the latter a new preparation, prepared for Mr. William Murrell and ourselves by Mr. Wright, under the direction of Dr. Graham, Assistant Professor of Chemistry at University College.

We used sulphate of atropia; the crystalline hyoscyamia, prepared in Germany, and the daturine were dissolved with the assistance of sulphuric acid. Ethyl atropia, being soluble in water, was used without the addition of an acid.

The results in this case fully conform the strong recommendation of Dr. Robert Lawson, and they prove that atropia and daturine, if not equal, are of nearly equal value to hyoscyamia.

Eliza Reynolds, aged twenty-two, a nurse at University College Hospital, was noticed one night when on duty to be odd in her manner; next day she was unmistakably mad. She lay in bed with her eyes closed, disregardful of everything around her. She talked incoherently, and when asked a question made allusion to a different subject. Her temperature was 99, pulse 104, her breathing irregular. Her bowels were constipated. Beyond her madness we could not discover any disease. Her manner soon changed, for next day she sat up in bed, looking vacantly around her, and continued in this state day and night, getting no sleep in spite of narcotics. Her delusion took a religious form, and she showed a suicidal tendency. She very rapidly lost flesh, her eyes became sunken, and this in spite of her taking a fair amount of milk and beef-tea. Her tongue was always dry, and her temperature normal. She passed everything under her. We felt unless we could give her sleep that she must soon die, and, as morphia had failed, we determined to use hyoscyamia. On the evening of October 25 we gave her a grain of the crystallised alkaloid, with most complete success. We then resolved to give atropia, and see if that would answer as well. We were afraid to give a grain of atropia, so on the first night we gave only a quarter of a grain, but without producing any sleep. We next gave three-quarters of a grain, and then a grain, and afterwards we employed daturine and ethyl-atropia. The effects of these different remedies are given subsequently in a table. With sleep the bodily health of the patient greatly improved, but her mind continued in the same feeble state.

The first dose of hyoscyamia flushed her face and hands a deep red, but this effect was not noticed afterwards. Her tongue, as we have said, was always dry before the use of hyoscyamia, and the day after the first dose it was still more so; but subsequently, to our astonishment, the tongue was always moist in the day time, though it became very dry for some hours after each dose of the alkaloid. We were astonished also to find that after the second or third day the skin was always moist during the day; during the early part of this treatment her tongue was very red, though moist and clean, but afterwards it became quite natural. About a week before she left hospital to go home she was allowed to get up, and she constantly walked slowly about the ward, kneeling down before the other patients. We were unable to take the pulse very frequently, or otherwise very closely study the effects of this large dose of hyoscyamia, as we were afraid lest we should wake her, and we felt that her life depended on her getting sound refreshing sleep. After the first dose of hyoscyamia, the pulse rose from 104 to 144 in half-an-hour; in an hour it had fallen to 120, and then gradually declined, so that after eight or nine hours it was 100 again. The respirations were not hurried. After the second doses the pulse rose from 104 to 125. On the following nights the pulse was very little affected. On the twelfth day of her illness her pulse fell to 80. We may add that throughout her pupils were widely dilated. We now give a table showing the effect of the different alkaloids in producing sleep.

Date.	Medicine.	Time given.	Interval before sleep.	Duration of sleep.
1876				
Oct. 21	Liq. Morph. ♏ xx.	Bedtime	—	None
,, 22	Same	,,	—	None
,, 23	Same	,,	—	None
,, 24	Liq. Morph. ♏ 100 (in three doses)	,,	—	None
,, 25	Hyoscyamia, gr. 1 (?)	4 P.M.	1 hr.	15½ hrs.
,, 26	Hyoscyamia, gr. 1	7 ,,	1¼ hr.	11½ hrs.
,, 27	Same	7·45 ,,	1¼ hr.	9½ hrs.
,, 28	Same	8·15 ,,	1¼ hr.	8 hrs.
,, 29	Sulphate of atropia, gr. ¼	5 ,,	—	No sleep
,, 30	Hyoscyamia, gr. 1	11·45 A.M.	1½ hrs.	11¼ hrs.
,, 31	Sulphate of atropia, gr. ¾	9·7 P.M.	1 hr. 8 m.	7¼ hrs.
Nov. 1	Sulphate of atropia, gr. 1	8 ,,	2 hrs.	7½ hrs.
,, 2	Hyoscyamia, gr. 1	8·15 ,,	1¼ hr.	9½ hrs.
,, 3	Daturine, gr. 1	8·15 ,,	1 hr.	8 hrs.
,, 4	Ethyl atropia, gr. 1	8·30 ,,	—	No sleep
,, 5	Hyoscyamia, gr. 1	10·15 A.M.	1 hr. 5m.	13½ hrs.
,, 6	Same	8 P.M.	1½ hr.	9½ hrs.
,, 7	Daturine, gr. 1	8 ,,	2½ hr.	7 hrs.
,, 8	Sulphate of atropia, gr. 1	8·15 ,,	2 hrs.	7 hrs.
,, 9	Hyoscyamia, gr. 1	8·30 ,,	2 hrt.	8 hrs.
,, 10	Daturine, gr. 1	8·30 ,,	2 hrs.	6 hrs.
,, 11	Sulphate of atropia, gr. 1	8·30 ,,	1¾ hrs.	6¼ hrs.
,, 12	Hyoscyamia, gr. 1	8 ,,	¾ hr.	7¼ hrs.
,, 13	Daturine, gr. 1	8·30 ,,	1 hr.	7 hrs.
,, 14	Sulphate of atropia, gr 1	8·30 ,,	1 hr.	7 hrs.
,, 15	Ethyl atropia, gr. 1	—	No sleep	—
,, 16	Sulphate of atropia, gr. 1	8·30 P.M.	1½ hr.	8 hrs.

Hence, excluding the first two nights with hyoscyamia, during which time the patient appeared to grow somewhat accustomed to the drug, and thus it seemed to lose some of its effect, we find that hyoscyamia on an average produced 9½, sulphate of atropia 7¼, and daturine 7¼ hours' sleep.

It thus appears that in cases of madness or delirium, sulphate of atropia and daturine are as good, or nearly as good, as the far more expensive alkaloid hyoscyamia. Perhaps it may be objected that the sleep she latterly obtained was natural sleep, and not at all due to the alkaloids, but this cannot be true, for it will be seen in the preceding table that on the nights she took a too small dose of sulphate of atropia and on the night she took ethyl-atropia, she had not even five minutes' sleep; the nights were absolutely sleepless; we therefore conclude that the alkaloids did produce the sleep. The sleep was very heavy, but the patient could be awaked, but immediately relapsed into sleep again. Sometimes the breathing was a little stertorous. She slept with her mouth wide open. We have deferred publishing this case for some weeks, that we might learn how the patient progressed after leaving the hospital, as we felt that possibly the alkaloids might cause some of her delirium. We thought that this was improbable, for the delirium of belladonna usually subsides in less than twenty-four hours, and yet in this case, when ethyl-atropia (a drug which does not affect the brain) was given, and she had no sleep, the delirium was always worse the day following the sleepless night.

About a week after reaching home she began to improve, and in a letter, dated December 7, it says "for the last ten or eleven days she has been quite sensible. She is quite cheerful, but her eyes are too weak to read much at present." So we conclude that the effect of the alkaloids on her eyes had not quite disappeared twenty-one days after the last dose of alkaloid.

TAPE-WORM (*TÆNIA MEDIA CANNELLATA*) EXPELLED BY TURPENTINE AFTER THE FAILING OF SEVERAL OTHER REMEDIES.

By Arthur Leared, M.D.,

Senior Physician to the Great Northern Hospital.

A middle-aged gentleman of stout make had been for some time under my care on account of dyspepsia with nervous depression. On the 6th of April last he passed about three yards of a tape-worm, of which he had not previously noticed any joints; he had been in the habit of eating beef and mutton very much underdone.

By my directions he fasted from noon, and took on the night of that day Kamalæ ʒii. On the following morning, having fasted in the interval, he took another ʒii dose of Kamala. The bowels were freely moved, and long portions of worm, including pieces of the neck, were expelled.

After this the patient looked very closely for indications of the worm, and on June 20th, seven weeks and four days from the expulsion, observed a fully developed proglottis with the fæces.

The same precautions as to fasting were observed, and he took Ext. Filicis Liq. ʒi. (carefully made by Messrs Dinneford from English rhizomes,) followed in four hours by the same dose.

A mass of worm was expelled by the first dose, including some portions of the neck of such small dimensions that one hoped that the head itself would have been detached, or would have perished.

Nevertheless on September 15, twelve weeks and two days after the previous expulsion, proglottides were again observed. On September 30 the patient took with the same precautions as before, Ext. Filicis Liq. ʒiii., Tincture Kamalæ ʒii. in two doses, followed by castor oil. Large portions of worm, with some narrow pieces, were again expelled. As a further precaution, after the interval of a week, the following draught was taken; succeeded, as in the other instances, by another of the same kind.

Ext. Filicis Liq. ʒii
Pulv. Kamalæ, ʒi
Mucil. Acac. ℥ss
Infus, Kusso. ℥ii.

No portions of the worm were found in the evacuations, which owing to the action of Kamala, were quite free. The only inconvenience experienced from the combination was nettle-rash and a sense of lassitude. The urine, as on other occasions, after taking male fern, was observed to be remarkably dark coloured; it was hoped that by following up the treatment by a combination of tænicides, each in full doses, the vitality of the worm would have at length succumbed. I had great confidence in Kamala for tape-worm, having formerly used it largely with much success. But this hope was not realised. On December 12, seven weeks and three days from the last expulsion, portions of worm were again observed in the fæces.

I now directed the patient, after having fasted in the usual way, to take the following draught, and if it did not purge, a dose of castor oil soon afterwards :—

Spir. Terebinth. ʒiii
T. Hyoscy. ʒss
Mucil. Acac. ℥ss
Aquæ Chl. ad. ℥ii.

Free evacuations, containing the worm, together with the long-sought after head were soon caused by the draught alone. The hookless flat-shaped head at once proved the worm to be Tænia media cannellata. This worm is much more difficult of expulsion than Tænia solium.

My opinion, confirmed by this case, in which Kamala and extract of male fern were given in unusually large doses without destroying the worm, has long been that of all tænicides the old-fashioned one, oil of turpentine, is the most potent. But turpentine in large doses is not free from inconvenience, or even danger to life; I know of one death caused by its injurious action on the kidneys. This danger can be greatly diminished, if not altogether averted, by the precaution of giving a purgative, if the turpentine does not itself very speedily act upon the bowels.

TWO CASES OF VIOLENT CHOREA, ILLUSTRATING THE ADMINISTRATION OF CHLORAL HYDRATE IN LARGE DOSES.

BY ROBERT BRIDGES, M.B., OXON.

THE lamentable issue of several cases of chorea treated by frequent small or moderate doses of chloral hydrate, and the failure of this use of the drug in other affections where I have had opportunities of observing the facts, led me almost to believe that there must be something specially dangerous in this manner of giving chloral; I fancied too that this effect was due to the effect of chloral on the nervous system when it did not produce sleep, and that it was possible that its action in the sleeping and waking states of the body might be very different, and in consequence of this opinion I determined to use it in such doses that its narcotic power should have a fair trial.

I do not know that chloral may not be specially fit to oppose the nervous disturbance in chorea, but I am sure that it owes much of its value to its power as a narcotic. The disease is naturally suspended during sleep, and therefore a drug which produces sleep is plainly indicated. For by procuring sleep, not only is the actual disease lessened in quantity, but the continuity and habit of it are broken, remission and rest are obtained, with the opportunity for the natural repair and reproduction of worn or injured parts, while time also is gained, in which the malady may die out of itself, or be made to yield to remedies of a tonic nature.

If these considerations are of any weight, it is plain that chloral should be given in chorea in doses that will cause sound sleep: and it must follow the rule for the administration of narcotics at night-time, rather than wait upon the convenience of the physician, who is apt to reckon it as a drug that must be watched in its action, and therefore given by day. In illustration of these remarks I have only two clinical observations to record, but they are both of successful cases. The principle of treatment in each was to administer the chloral so that the patient should get about ten hours' sound sleep in the twenty-four. With this intent a dose of gr. xxx. was administered, and this would have been repeated, as much, or half as much, or less, according to the circumstances if the patient had not slept. Then immediately on waking a second dose was given, in proportion to the ascertained effect, less or more as the patient had slept well or ill, but in any case less than at first: and on waking again, another dose less than the second, and so on till the amount of sleep required had been obtained, when the chloral was discontinued till the next night. Of the two patients thus treated, one was cured completely in one day: the other had a few choreic movements only left on the third day. In each case I gave a preliminary dose of gr. xv. to discover any idiosyncrasy. The pulse, which was difficult to count, I do not record, because statements concerning its force are liable to inaccuracy: but in neither case was the pulse ever so affected by the chloral as to become feeble.

The first case was M. B., aged eighteen, might be taken for a girl of fourteen or fifteen. Neglected and dirty. Fourth attack, the first eight years ago, the last three years ago. Stated not to have had rheumatism or scarlet fever. This attack said to have begun eighteen days ago. When seen on the eighteenth day, the patient was in a febrile condition. Labial herpes, body heat 101°. Limbs much bruised: right foot a little swelled and tender. Systolic murmur heard over heart (auscultation very difficult). Universal choreic movements of great violence; inability to stand or speak; no difficulty in swallowing fluids. Patient said to be much worse by night than by day; and able to make herself understood by day. Said to have slept one hour last night. Ordered liquor arsen. ♏v. ter die.

19*th day.*—No improvement; has slept one or two hours in the last twenty-four. Morphia hydrochl. gr. $\frac{1}{4}$ injected subcutaneously; no result.—9 P.M., slept one hour after chloral gr. xv.—11. P.M., morphia ¼ subcutaneously; slept ten minutes.

20*th day*.—Much the same: at 7 P.M., chloral hydrate, gr. xxx. After this patient slept till 12.30 midnight. At 12.30, chloral hydrate, gr. x. Slept till morning of

21*st day*.—11.30 A.M., chloral hydrate, gr. v. The choreic movements being entirely ceased, it was thought well to protract the patient's sleep a little longer.

22*nd day*.—Temperature fallen below normal. There seemed to be some wrist drop, as if from fatigue of extensors. Convalescence on tonics uninterrupted.

The second case was A. W., servant girl, aged twenty, looks somewhat younger. Complexion dark. This is the second bad attack: had another five years ago; has had one or two lesser attacks. No history of rheumatism, nor heart murmur. Menstruation had ceased for last two months, had previously been scanty. Has been ill with this attack for six weeks; it has got worse. Total inability to speak; has eaten nothing for the last few days: choreic movements universal and very violent: expression insane; constant grinding of the teeth, with fits of crying.

1*st day of treatment*.—10 P.M., chloral gr. xxx. Patient held down till she became quiet; went to sleep in about twenty minutes, slept without waking till 11.30 P.M., and remained quiet till 2 A.M., when I saw her and gave her gr. x. Slept till 4.30, and then off and on till

2*nd day*.—11.30 A.M., when she was wide awake and less disturbed. 10 P.M., gr. xxv., and gr. x. when she woke. This kept her asleep all night, and on

3*rd day*.—She was much quieter. 10 P.M., gr. xxv., followed by gr. x., followed by gr. v. Slept till morning.

4*th day*.—Much better. 10 P.M., gr. xx., followed by gr. v. No further dose was needed. After this the patient was like one with a very mild attack of chorea. She slept well and regularly by night, and was better each day. She was put on iron and aloes. I saw her several times afterwards, and she was never free from a slight twitching of one hand; but this was scarcly noticeable. Her general health was so much improved that I did not recognise her. It will be seen that this patient took only 140 grains in the course of four nights, and the first patient only 45 in one night. I have never attempted the cure of mild attacks of chorea in this way, and have not had any further opportunity for proving it in severe cases. These two occurred in Dr. Black's wards at St. Bartholomew's Hospital, and I wish to thank him for his approval of my treatment, and for his permission to publish the result.

ON A NEW TREATMENT IN *POST-PARTUM* HÆMORRHAGE.

BY W. HANDSEL GRIFFITHS, PH.D., L.R.C.P.E.,

Corresponding Member of the Therapeutical Society of Paris, and of the Pharmaceutical Society of St. Petersburg; Lecturer on Chemistry in the Ledwich School of Medicine, Dublin.

ALTHOUGH not an obstetric practitioner, I have recently been consulted in two cases of severe *post-partum* hæmorrhage. In both cases every means had been adopted but unavailingly. It flashed across my mind in the first case to try the effect of the ether-spray, and accordingly I directed a large spray over the abdominal walls, along the spine, and over the genitals; the uterus at once responded, and the cessation of the hæmorrhage was almost immediate. In the second case I lost no time in adopting a similar treatment, and with an equally successful result. I have consulted several eminent obstetric practitioners in Dublin, and am informed by them that they are not aware that this treatment has been heretofore proposed. The advantages of the ether-spray over the application of cold water and the other means usually adopted in these cases must be patent to every practitioner of midwifery.

ON DIPHTHERITIC PARALYSIS.

BY THOMAS STRETCH DOWSE, M.D., F.R.C.P.E.,

Physician Superintendent Central London Sick Asylum, Highgate.

It is well-known that this especial form, or, indeed, that a form of paralysis has been known to succeed an attack of diphtheria, or an inflammation of the throat, from the time of Hippocrates. So that in the fact of the existence of this especial paralytic affection we have nothing new, yet in its peculiar clinical and characteristic features we find a disease of most absorbing interest both in regard to its etiology and pathology. Its diagnosis is easy, and its prognosis favourable.

Dr. Eade stated at the British Medical Association in 1874, that he was the first person in England who pointed out (in 1859) that paralysis followed diphtheria.

In the *British Medical Journal* for October 2, 1875, we find a very interesting letter from Dr. Wade, of Birmingham, entitled "An Historical Note on Diphtheritic Paralysis," showing that both diphtheria and its paralytic sequela were well known in 1749. The book from which the extract is taken is entitled "An Historical Dissertation on a Particular Species of Gangrenous Sore Throat which Reigned the Last Year among the Children of Paris; translated from the French of Dr. Chomel, which was printed at Paris in the year 1749, by N. Tomano, M.D., London, 1753." It is of such interest that I give it in detail. "Miss Blossac the younger, aged 6½ years. The patient did not seem to be quite free and out of danger until the 45th day of the disease, having always a pain in expressing herself, speaking through the nose by reason of the fallen uvula.

I have since been advised that for two months together they gave her, in order to lessen the disagreeable speaking through the nose, a little camphorated brandy with equal parts of lukewarm water to draw up her nose, and she used the remedy with pleasure" (p. 31).

"Miss Bonai was taken ill of the disease at home, and was cured. . . . I have since learned that this patient, after the 40th day of the disease, spoke very much through her nose, became squint-eyed and deformed, but that as she grew stronger, she also regained day by day her normal state" (p. 37).

"The patients grow leaner and leaner daily, speak much through the nose, have great trouble to articulate their words. . . . The fever lasts dangerous even beyond the 45th day; the uvula is a long time trailing or pendulous. The patients are a long time very weak and languid" (p. 41).

This very graphic writer leaves no doubt that the disease of which he treats was veritably diphtheria.

Admitting with Dr. Jenner that we may have six varieties of diphtheria—namely: 1st, the mild form; 2nd, the inflammatory form; 3rd, the insidious form; 4th, the nasal form; 5th, the primary laryngeal form; 6th, the asthenic form—I ask the question, Can we, provided such definition be an accurate one, take either of these forms and say that our patients will be more liable to paralysis after it than from any of the others?

In my own experience—and I believe it is considered to be the rule—it has been impossible to state with any degree of certainty in what patients an attack of paralysis is likely to supervene that of diphtheria, although Dr. Balthazar Foster states that "he has never known paralysis to follow the non-febrile form of diphtheria." For we often find a very severe attack of paralysis to follow a slight or most modified attack of diphtheria, whilst on the other hand, a very severe attack of diphtheria will be unaccompanied with paralysis, neither have I been able to trace in the constitution of the patients any especial nervous idiosyncrasy to render them more prone to paretic influence, but my knowledge of this disease is not so extensive as to permit me to speak with certainty upon this point.

But judging from other nervous diseases, such as chorea, hysteria, tetany, and so on, I think we should find, if the matter were more closely investigated, that in those persons suffering from paralysis after the devitalizing agency of some septic or morbid influence, there was, either by hereditary or some constitutional predisposing cause, a want of inherent tonicity throughout the nervous system and nervous centres, which renders them more easily excited or acted upon by external agency. This is conspicuously demonstrated in the poisoning by lead. Some men will go all their lives and get their systems saturated with lead without any form of paralysis resulting, whilst others even from the application of lead plaster or ointment to the skin will suffer from palsy of the extensors and abdominal muscles.

M. Sanné, in his recent work on diphtheria, says that the alterations of the blood in this disease, in reference to its intimate composition, are little known, and that chemical analysis gives uncertain results, so that we are compelled to consider in a general manner the changes which this liquid undergoes.

Andral and Gavanet have shown that the fibrin is notably diminished. The globules undergo rapid disintegration; and M. Bouchut has drawn attention to the large increase of leucocytes. In most of the observations of M. Labadie Lagrave, he states that in the normal condition scarcely three of these bodies are to be seen in the field of the microscope, whilst in diphtheria they often amount to sixty.

M. Sanné states that the red blood globules are altered in various ways, notably when the blood takes abnormal colourings. The abnormal increase of the débris of the red corpuscles, which is rare in the normal state, is considerably increased through the agency of the diphtheritic poison which produces their rapid destruction. Consequent upon this alteration in the normal constitution of the elements of the blood, we find the urine to be loaded with albumen, which, as stated by Dr. Sanderson, is not associated with a lessened excretion of urea, but rather, as in other pyrexiæ, by its abnormal increase, therefore we are not likely to get any form of convulsions or paralysis of toxic or uræmic origin. I make note of this especially for the reason that the stage at which diphtheritic paralysis makes its appearance is usually subsequent to what might be called the albuminuric period. Frequently not a trace of albumen can at the time be detected in the urine, although a copious production previously existed, yet it is by no means rare for the albumen to reappear with the paralysis.

The co-existence of albumen in the urine, in various forms of paralysis (not diphtheritic), has upon many occasions led me to give a hopeful prognosis, and as the albumen passed off, so the paretic troubles have gradually declined, showing that the nerve lesion was merely functional, and due to some blood change inducing a vaso-motor paresis, leading to passive exudation of primordial plasmic matter, not only from the blood-cells themselves, but also from the vessels, thereby exercising pressure upon the nervous centres.

The significance of diphtheritic paralysis has been fully noted and described of late years by M. Roger, Trousseau, Gubler, Colin, Charcot et Vulpian, Herman Weber, Sir J. R. Cormack, Ormerod, Duchenne, Greenhow, Wade, Bailey, Dr. Sanné, and many others.

We have first to consider the period when this paralysis makes its appearance, and then proceed to describe its clinical characteristics, treatment, and pathology.

On the authority of M. Sanné, if during convalescence from diphtheria the temperature suddenly rises, paralysis must be anticipated. There can be no doubt that it is capricious alike in its origin, seat, and departure, sometimes it is fixed to one organ, at others attached to many, or it may involve the whole body. It is sometimes limited to the throat alone, and to those muscles supplied by nerves taking their origin in the bulb of the medulla, and so far it represents in a very striking manner what is termed Labio-Glosso Pharyngeal or bulbar paralysis, but there are marks of distinction which I will endeavour to draw as I proceed.

Paralysis may occur in a few days after the cure of diphtheria, or it may not make its appearance for a month, six weeks, or even two months. It is usually symmetrical. When it comes on later it is frequently found to be more persistent than when it occurs earlier after the presumed cure of the disease, although in the latter case it is liable to recur in some different form. The duration of the paralysis cannot be well defined. When it is limited to the throat or larynx it does not usually exceed eight or ten days, but even here it may last longer, and end in fourteen or twenty days.

The mind and intellect are rarely if ever brought under its influence.

According to Brenner, the troubles of motility are of three kinds :—

"1. The true ataxia, caused in all probability by lesion of a centre for the co-ordination of movements.

2. An ataxic paralysis, characterized by a paresis of certain groups of muscles of the extremities over those of other groups.

3. A true paralysis, which attacks alike all the muscles of the limbs, and which can be complete or incomplete."

The irregularity of the paralysis in muscular groups can indeed give rise to movements resembling chorea.

Herman Weber and others have shown that loss of motor power is not migratory, but this is certainly open to variability. Sensation, on the other hand, passes through the same series of changes as motility—sometimes it is slight, at others it is completely abolished. It may extend over the whole of the cutaneous surface, but it is more frequently distributed over isolated parts, as in hysterical paralysis.

We will now take the paralyses of the cranio-spinal nerves in anatomical sequence.

1. Nerve—some authors assert that the sense of smell is rarely interfered with, but in all my own cases it has been almost obliterated.

2. The defect of sight, according to Von Graefe, is due to paralysis of the muscles of accommodation, rather than to any retinal change. M. Parchant states that in cases of amblyopia associated with paralysis there has been found by the ophthalmoscope a neuro-retinitis similar to that produced by alcohol and tobacco. There are three interesting cases of this condition published by Mr. Hutchinson in the *Lancet* for January 7, 1871. It is observed that the patient is usually a child, that the defect of sight has come on suddenly, and consists usually of inability to read. The ability to see well at a distance, and to read with the assistance of a strong glass, at once establishes the fact that the only disease is a paralysis of the muscles of accommodation.

The following is a typical case. "Paralysis of accommodation after sore-throat (diphtheritic); no history of contagion." Ellen L——, aged 14, applied at the Royal London Ophthalmic Hospital, on Nov. 10th, 1870, complaining of dimness of sight; this symptom had been present about five weeks. On examining her it was found that she could see perfectly ($\frac{20}{20}$) in the distance, but that for reading her vision was very defective (12 J. at 12 inches); her pupils acted well. Her mother stated that, seven weeks before, the child had been taken ill with some shivering, followed by sore-throat, swelling under the jaw, and great bodily weakness. She had no rash. Her sight began to fail about a fortnight after the sore-throat came on, and at the same time it was noticed that she spoke "through her nose," and that liquids sometimes returned through the nose, instead of being swallowed. No history of scarlet fever or of sore-throat in other members of the family or acquaintances could be obtained. She had not had scarlet fever. She took quinine mixture, and was quite well in a fortnight.

Mr. Hutchinson does not mention whether or no the retina was examined by the ophthalmoscope, and knowing how careful he is in all his observations, I think we may conclude that it was done, and nothing abnormal was detected.

(*To be continued.*)

Reviews.

1. *Compendium of Children's Diseases.* A Handbook for Practitioners and Students. By DR. JOHN STEINER. Professor of Diseases of Children in the University of Prague, &c., &c. Translated from the Second German Edition by Lawson Tait, Esq., F.R.C.S. London: J. and A. Churchill, 1874.

THERE is perhaps no field in practical medicine which was so completely neglected till within the last twenty or thirty years as that of Pædiatrics. It is, therefore, exceedingly encouraging to notice the amount of activity that has sprung up within it of late. The publication of repeated editions of works which are devoted to this department of medicine afford gratifying evidence that the minds of the medical profession are being seriously directed more and more closely to the mastering of those diseased conditions peculiar to early life, as well as to the investigations of the peculiarities which infancy and childhood impress upon diseases common to all periods of life. Proof is likewise afforded that a great amount of attention is being bestowed upon the best methods of obtaining data for forming a diagnosis in the case of very young children, which means that the most difficult problem perhaps in the whole range of the practice of physic is being earnestly grappled with. Much of the impetus given to the study of children's diseases is unquestionably referable to the general establishment of hospitals specially dedicated to the treatment of sick children. These institutions have afforded facilities for honest workers to observe, systematise, and elaborate the facts peculiar to diseases affecting those of tender years, and rendering as they do works such as those before us possible, they extend their benefits far beyond the physicians and students who are fortunate enough to be closely connected with them. The three volumes which lie before us show that on the Continent of Europe, in America, and in Great Britain, this department of medicine is being anxiously prosecuted.

We have perused all these books with much pleasure and satisfaction, and are glad to be able to say that they all possess very great merit.

Steiner's work is very comprehensive and somewhat ambitious in aim as its title indicates. It is, however, a little deficient occasionally in lucidity of statement, and extremely defective in practical details. Its pathology contains the most recent views of the various subjects, but treats of them in a painfully sketchy manner, and in consequence the book reads more like a series of notes to lecture from than a systematic treatise. In regard to practical details the translator has occasionally added his own hints where Steiner was specially defective. This is particularly the case in reference to the mode of operating and the after-treatment of tracheotomy, which is given by Mr. Tait in language at once so terse and clear that one is tempted to wish that he had written an original treatise rather than translated this one.

Measurements are given in centimetres, and temperatures in centigrade degrees, both of which circumstances seem to us to detract very materially from the value of the book to English readers. Very few students and still fewer practitioners in this country are so accustomed to those measures of length and heat as to form an accurate conception of them without first translating them into English metres and into degrees of Fahrenheit. The consequence is that the English reader is either perpetually embarrassed by a series of needless calculations, or he obtains an indistinct idea of the quantities expressed by the ciphers. In one instance at least this arrangement has led to the translator either making or letting slip a palpable blunder. At page 171, line 22, it is stated that in pleurisy the temperature varies from 40° to 44° (*sic*), *i.e.*, from 104° to 111·2 F., which is manifestly a mistake, and one which we think would not have escaped notice had the temperatures been stated in the Fahrenheit scale.

There has been a considerable want of accuracy in revising the proof sheets, as is evidenced in a number of small errors. For example, "cunnabis indicus" and "liquor ammoniæ" anisata constantly recur, though both expressions defy the first principles of Latin Grammar. Again, p. 157, line 4 from top, "marked" is evidently a mistake for "masked;" p. 205, line 7 from bottom, "beneath" is manifestly used for "between;" p. 322, line 2 from bottom, "through" is used for "though;" p. 327, line 13 from bottom, "urgency" is used for "agency," and so on. Now and then a German idiom appears in an awkward English dress, but on the whole the rendering is good. The author's observations on the nourishment of children are specially worthy of attention. Respecting the varied question as to the difference between exudative croup and diphtheritic croup, Steiner holds the old view, that there are two diseases, clinically separable. But he allows that in two-thirds of all the cases of croup—he is speaking then of exudative croup and not of diphtheria—under his care he has found the pharynx affected by diphtheritic exudation, a statement which we submit seems rather calculated to establish the frequent identity of diphtheria with so-called exudative croup. In his article on Diphtheria, again, he also states that the two diseases frequently cannot be distinguished pathologically, nor does any kind of exudation offer anatomical grounds for separating them. He does not believe in the bacterial origin of diphtheria.

Steiner's therapeutical recommendations are painfully short and simple, but usually sound. He states strangely that of all gargles in croupo-diphtheritic pharyngitis he has found lime-water the best. We do not think in regard to empyæma that he gives sufficient importance to the now very successful operation of thora-enteris, which he seems to place very much on a level with allowing nature to effect a perforation. The book, though better fitted for practitioners than students, as its perusal presupposes a wider acquaintance with, and minuter knowledge of, the subject than most students possess, is well worthy of the careful study of all members of our profession interested in pædiatrics. And what medical practitioner is not?

How to Use the Ophthalmoscope. By EDGAR A. BROWNE, Surgeon to the Liverpool Eye and Ear Infirmary. London: Trübner and Co., 1876.

IT is by no means an easy task to write a good elementary work on a difficult subject. The author must not only possess a comprehensive and accurate knowledge of it; but must be able to express himself in simple and easily intelligible terms. He requires to have the power of seizing the essential facts; and placing them in a striking light before the reader. He must not weary him with long discussions, nor confuse him by the multiplicity of details. He must be short but clear. The little book before us fulfils these requirements in a very satisfactory manner.

It is divided into four sections: the first treating of the general principles of optics; the second of the ophthalmoscope and the mode of using it; the third of the appearances presented by the healthy structure; and the last being devoted to a account of the appearances seen in disease.

Considering that the metrical system is now coming i
general use, partly in consequence of its greater simplicity
partly because it was accepted at the last ophthalmological
gress for the sake of uniformity, it is a matter of regret
Mr. Browne has retained the old numbering of glasses.
from this we have much pleasure in recommending this p
to students. The explanations are given in a very homel
which cannot be misunderstood, and if the student follow
arguments in the first parts of the book and supplemen
descriptions by personal and direct observations, he will p
a knowledge of the ophthalmoscope that will be amply suf
for all ordinary purposes.

Clinic of the Month.

Physiological Action of Mancona Bark.—From a careful examination of the bark of Erythrophlæum guineense, MM. N. Gallois and E. Hardy have arrived at the following conclusions:—The bark of the Erythrophlæum guineense, employed by some of the natives of Western Africa to poison their arrows, and which belongs to the Leguminosæ, contains a toxic substance of considerable activity. This substance—for which they propose the name of "erythrophleine"—is a muscular poison, and especially a cardiac muscular poison, paralysing the action of the heart more or less rapidly, according to the dose administered. Warm-blooded animals die as soon as the heart is paralysed, whilst in frogs life persists for a variable period. In animals poisoned with it the functions of the nervous system remain, to all appearance, long intact after the heart has ceased to beat. In the dose of one-half to one milligramme, placed directly on the heart, or of two milligrammes subcutaneously injected, erythrophleine stops the heart of a frog in from five to eight minutes; four milligrammes injected beneath the skin of a guinea-pig proves fatal in the ourse of a few hours; and four centigrammes, in divided doses, killed a curarised dog of moderate size in one hour and a half. In warm-blooded animals it produces convulsions and extreme spnœa, consecutive upon disorders of hæmatosis. In cold- oded animals it produces progressive stupefaction, which s to complete resolution of the muscles. The heart is lysed before either the smooth or striated muscles, conse- nt on the large volume of blood with which it comes into ct in a given time. In frogs the ventricle stops in systole, ricles in diastole. In warm-blooded animals the heart is y found soft and filled with blood, and the poison can be strated by chemical tests in the blood. In the frog the eats slowly before stopping, but in the dog its action is erably accelerated. In the three dogs operated on the tension was found to be augmented. Atropine does not ate the heart; curara retards its effects. It is difficult, the authors observe, to say whether Mançona bark will ever be introduced into practice. If sternutatories were still employed it would certainly take its place amongst them; and it may be observed that, like digitalis, it augments arterial tension. (*The Lancet,* Dec. 2, 1876.)

The Hypodermic Treatment of Syphilis.—Professor Neumann, in a recent memoir on this subject, after giving an historical sketch of the methods of injection which have been employed, came to the conclusion that the mercurial albuminates and peptones are the preferable substances to employ. They may give rise to more or less reaction, but they never induce the abscesses and gangrene which are sometimes caused by other mercurial preparations. Much depends on the state of the patient, but something, also, on the dexterity of the operator and the cleanliness of his instruments. The injection should be made in the back—the lateral parts of the thorax or the buttocks; the upper extremities and indurated tissues should be avoided. From twenty to forty injections may be required. The maculated, papular and squamous forms soonest disappear, whilst the small pustular syphilides and enlarged glands require a longer time. Psoriasis palmaris and plantaris soon disappear. Professor Neumann usually injects only once in twenty-four hours, but it may be done twice in the same period without danger; but care should be taken to keep the teeth clean, and to avoid stomatitis. A very small total quantity, not amounting to more than one or two grains, is often sufficient to effect a cure. (*Med. Times and Gazette,* Nov. 18, 1876.)

The Treatment of Psoriasis.—One use appears, at last, to have been found for phosphorus, which, if confirmed by further experience, will make it a most useful medicine. Dr. Broadbent mentioned at the Clinical Society a case of psoriasis, in which, after other remedies had failed, he gave phosphorus, and in a week the disease, obstinate before, was cured. As Sir W. Jenner pithily observed, cases of psoriasis are plentiful, and phosphorus capsules to be had in abundance, and there should be no difficulty in inquiring into the action and use of phosphorus in this obstinate and oftentimes extremely troublesome disease. (*The Lancet,* Dec. 16, 1876.)

Ergot as a Preventive of After-pains.—Dr. Le Diberder makes some observations on the use of ergot in the prevention of after-pains. He gives half a drachm in divided doses, directly after the expulsion of the placenta, with the object of bringing about a firm and persistent contraction of the uterus, in place of the alternate contractions and relaxations to which after-pains are due. This treatment is by no means original, as we have known it to be adopted by several practitioners, especially those who practise it in the country. We doubt, however, its propriety or its success in all cases. In reference to this subject, we think it is not generally known that Sir Charles Locock was of opinion that these pains are in a great measure owing to the retention of coagula in the uterus and cervix uteri. He was, therefore, for many years in the habit of making firm pressure on the uterus directly after delivery, so as to promote their expulsion, and even of drawing them from the os and cervix uteri, when their expulsion was delayed. He used to say that in no instance where this practice was adopted had after-pains occurred. (*Medical Press and Circular*, December 20, 1876.)

The Significance of an Unruptured Hymen in Pregnant Women.—Professor Gustav Braun, of Vienna, in the *Wiener med. Wochenschrift* (*Med. and Surg. Reporter*, August 19, p. 152), arrives at the following conclusions in connection with this subject:—1st. An unruptured condition of the hymen cannot alone be regarded as a sign of virginity. 2nd. The hymen may possess so much elasticity that a not very voluminous organ may penetrate the aperture without leaving any trace of its presence in the vagina, so that the individual may be regarded as a virgin in the anatomical, but not in the gynæcological sense. 3rd. Various cases show that for impregnation to be produced it is not requisite that penetration of the vagina should take place, the deposition of semen within the vulva being sufficient. 4th. The accumulated blood seems to be more favourably discharged by spontaneous openings than by operative precedure. 5th. An "*error loci*" may occur, the urethra taking the place of the vagina as a channel for copulation. 6th. An imperforate hymen cannot be regarded as a preventative of delivery. These conclusions are based upon a series of clinical observations which place them beyond dispute. (*Medical Press and Circular*, December 20, 1876.)

The Local Application of Carbolic Acid and Creasote to the Bronchial Mucous Membrane.—Mr. Anderson Imlay, of the Bristol General Hospital, observes that carbolic acid, creasote, and tar have long been known and valued for their stimulant and antiseptic properties, when applied as topical applications to foul ulcers, skin diseases, &c. But as it seems that the profession has greatly undervalued their beneficial effects when applied as local agents to the bronchial mucous membrane, he suggests a method which he states has been singularly successful with him. In cases of long-standing chronic bronchitis, with profuse yellow purulent expectoration, he has never known these remedies fail to diminish expectoration and allay the troublesome cough in a remarkable degree. When we carefully examine the local action of carbolic acid, creasote, and tar on external inflammations, ulcerations, &c., we can easily conceive the beneficial results to be derived from their local application in the form of spray to the mucous membrane of the bronchi. Carbolic acid is well-known to prevent decomposition; and nowhere is this action better verified than in cases of bronchitis with offensive smelling sputa, for after a few applications it will invariably remove the fetid odour from the expectoration. He thinks in this particular carbolic acid is certainly superior to creasote. But their beneficent action is mainly due to their astringent effect on the mucous membrane; and creasote has here a great superiority over carbolic acid, for it will frequently diminish the expectoration to one-half its former quantity in the course of three or four days. Their sedative properties are greatly inferior to those beforementioned, for he has frequently employed them in cases where a constant irritating cough, with slight mucoid expectoration, were the only symptoms complained of; but Mr. Imlay cannot say that he has ever seen any benefit derived from their use. With regard to the manner of their application the instrument he prefers is Siegle's inhaler, as he believes it possesses special properties when the aim is to apply local medication to the bronchi. It consists essentially of a boiler containing water, a glass containing the solution of carbolic acid, creasote, or tar, as the case may be, and two glass tubes drawn to a fine point like an ordinary spray producer. The steam from the tube in connection with the boiler draws, by capillary attraction, the medicated solution up the second tube, and by this means a very fine spray is produced, capable of permeating to the most minute ramifications of the bronchial tubes; and, moreover, when it reaches the lungs it approaches as nearly as possible the temperature of the body. He generally commences with a weak solution of creasote—two minims to the ounce of water—and gradually increases it to twice that strength. A sufficient quantity of spirit should be added to dissolve the creasote. He directs the patient to take one deep inspiration, so as to entice the spray well into the lungs, and again to renew it in the course of a few seconds. After one or two applications it gives rise to no irritation or cough, and is extremely agreeable to the patient. Whether the benefit derived is partly due to its absorption by the mucous membrane he cannot say; but as he has never seen any change in the colour of the urine or any other constitutional symptom whatever, even after its use for some weeks, he is inclined to attribute its value entirely to its local application. (*Medical Times and Gazette*, November 4, 1876.)

The Uses of Viburnum Prunifolium in the Treatment of the Diseases of Women.—Dr. Jenks, of Detroit, in a paper read before the American Gynacological Society, stated that the bark of the root of this plant should be used. He exhibited a fluid extract prepared from that part of the viburnum, and recommended it to be prescribed in drachm doses as a uterine sedative of great service, especially in the management of cases of threatened abortion. It was found to be serviceable in the treatment of all uterine diseases characterised by loss of blood, such as menorrhagia, metrorrhagia, &c., and also in the treatment of nearly all forms of dysmennorhœa. It was considered as being insufficiently sedative to relieve spasmodic and neuralgic dysmenorrhœa. In the discussion which followed Dr. Bates, of New York, remarked that he had used the drug to a certain extent, and that it certainly had power to prevent abortion, especially in those instances when the accident had become habitual. (*The Medical Record*, No. 309, 1876.)

Abdominal Pregnancy Treated by Gastrotomy.—Dr. Thomas, of New York, read before the American Gynacological Society a paper which contained the report of a case of abdominal pregnancy treated by gastrotomy, with comments, and the following points were noted. Early diagnosis was made important, and prompt surgical interference recomended, not uniformly, but in certain cases non-interference would be criminal. No positive rule could be laid down. In the present instance fluid for the sac was submitted to an excellent microscopist, who declared that it contained what he believed to be the ovarian corpuscle. The placenta was left *in situ;* the external wound was kept open by a drainage tube; the sac was washed out with antiseptic injections, as symptoms of septicæmia were developed on the fourteenth day; and in the fifth week the placenta, partially decomposed, appeared at the opening and was removed. The child was well developed, but its death had been caused by a hair tightly encircling the funis and cutting off all circulation. When the peritoneum was reached it was found so hypertrophied that had not the doctor been positive in his diagnosis he should have regarded it as a condition associated with ovarian cyst, and proceeded to peel it off from the abdominal walls, and probably brought about a fatal result.

Atropine Enemata in Cystitis.—Dr. Simple states, in the *Virginian Medical Monthly*, that he has treated many cases of cystitis with success by administering in enemata from forty to sixty minims of a solution of sulphate of atropia (one grain to eight ounces of water), to which is added sufficient carbolic acid to prevent the formation of organic matter and the deposit of the atropia. The dose is added to half an ounce of water, and administered twice in the twenty-four hours. It uniformly and immediately arrests the frequent strangury and painful micturition, gradually checks the mucous and sanguineous discharges, and relieves the suprapubic pain with the cystic inflammation. When the urine is alkaline, Mettauer's nitro-muriatic acid is given to correct it; and when it is so acid as to irritate, the bicarbonate of potash or subnitrate of bismuth may be given, especially the latter, because of its tonic effects and its soothing influence on the mucous surfaces of the urinary organs. When constipation is present, which is frequently the case, it must be met by means of the German pulv. glycyrrhizæ co. or other aperients, until the effect of the atropia passes away which generally occurs soon. (*Medical Times and Gazette,* quoted from *New York Medical Journal,* September.)

The Use of the Galvanic Battery in Medicine.— In an interesting lecture on this subject Dr. Tibbets stated the general principles of electro-therapeutics, and pointed out that the influence of faradaism in those cases in which it does not produce muscular contraction is chiefly stimulant, that where it does produce contraction it acts in addition as an artificial gymnast, imitating natural muscular action in a way quite impossible to any agency but electricity; that the interrupted voltaic current is similar in its action upon muscle to faradaism, but that this is complicated by chemical effects upon the animal tissues, and by special influences upon the cerebral nervous system. That the constant voltaic current differs altogether from either of the above, that it consists not only of a current which is continuous, and which does not vary in power during the application, but of this current, so applied to the patient by the operator that its flow through the part of the patient's body to which it is directed, shall be as continuous as the stream of the current from the battery to the conductors; and it was strongly insisted upon that unless thus applied it is not a constant current at all, and that its therapeutic application will be unsatisfactory; that the effects of the current thus applied are chiefly sedative, restorative, or refreshing and absorbent; that it possesses great power, power sometimes unapproached by any other remedy in relieving pain; that in its application for the relief of neuralgia the sponges should be so applied as to include the affected nerve in the circuit; that the strength of current should not be sufficiently great to produce pain; and that not only should the conductors be maintained quite immovable, but that care should be taken that the strength of the current should be so gradually increased that no shock is felt, and at the end of the application it must be as gradually decreased. Length of application from five to ten minutes, and frequency, usually, once or twice daily. An interesting case was, however, detailed of a patient who for two years had been subject to attacks of neuralgic pain, occurring from six to twenty times daily. She was galvanised twenty times upon the first day. There was a rapid improvement; the attacks after a month's treatment were reduced to one or two weekly, and in three months the patient was cured. Dr. Tibbets believes that in severe and obstinate cases the full sedative effect of the current is only to be obtained by applying it as frequently as the paroxysms of pain recur. The use of electricity in muscular rheumatism and rheumatic gout were next considered and cases quoted. In cerebral paralysis no support was given to cerebral galvanisation, and it was advised that peripheral faradisation should not be used until three or four months after the attack, and then only of a strength just sufficient to bring the muscles into full contraction, but that in cases in which the paralysed muscles were cold, blue, flaccid, and ill-nourished, they should be well sponged with the voltaic current, alternately with faradisation. Applications to be made daily, or every other day, for from five minutes to fifteen minutes. In spinal paralysis the evidence in favour of direct electrisation of the cord was said to be much greater than could be adduced in support of similar treatment of the brain, and when powerless in cure, it not unfrequently relieved some of the most distressing symptoms. (*The Lancet*, January 20, 1877.)

Cure of Aneurism by Complete Temporary Pressure.—An interesting case of aneurism cured by temporary pressure is reported by Mr. Thomas Wright, of the General Hospital, Nottingham. The patient, aged thirty-nine, and affected with syphilis, was admitted into the hospital on the 1st of November with an aneurism of the femoral artery of six months duration. Nothing beyond rest in bed was attempted for a day or two, and then a Carte's compressor was applied for several days to the external iliac and common femoral arteries, but without much apparent benefit. From November 7th to December 4th a shot bag was more or less constantly applied to the femoral artery, the diet in the meantime having been restricted according to the recommendation of Mr. Tufnell. No marked benefit having accrued from these modes of treatment, the elastic bandage was applied from the foot to the upper part of the thigh, and a stout indiarubber tourniquet fixed round the limb above the bandage, at 11.15 A.M. on December 31st. At 1.30 P.M. the tourniquet was removed, and a shot-bag was placed over the line of the vessel, but the bandage was allowed to remain in position. At 2.30 P.M., when the bandage was removed, the tumour was found to be firm, the pulsation to have ceased, except at the upper part, and the circumferential measurement of the limb to have increased seven-eighths of an inch. As a precautionary measure the application of the shot-bag was continued. At 12.30 P.M. next day all pulsation of the tumour had ceased, but returned again in the evening, and continued feebly until January 4th. On January 5th pressure over the artery was discontinued, and the case was practically cured. (*Lancet*, Feb. 3, 1877.)

Treatment of Diphtheritic Paralysis.—In a paper read before the Medical Society of London, Dr. Dowse, after stating that this affection often rose insidiously, and that he had found it to be impossible to predict with any certainty in what patients paralysis was likely to supervene on an attack of diphtheria, observed that the disease was one which usually terminated favourably, and that there were four remedies of great value in treatment, namely, nutrition, rest, the injection of strychnia, and the use of the galvanic continuous current. In bad cases he invariably fed the patient repeatedly through the day by means of the nasal tube. This gave, what was of the highest importance, rest to the palsied muscles. One-twelfth to one-sixth of a grain of strychnia was injected subcutaneously every day, and the continuous current applied to the spine and the palsied muscles. (*Ibid.* Feb. 3, 1877.)

Treatment of Hydrophobia.—Mr. George Fleming, of the Royal Engineers, Chatham, in commenting on some cases of hydrophobia reported in the *Lancet*, states that he has witnessed many cases of rabies in animals, though they were not submitted to treatment. He has also seen many cases of tetanus, and after pointing out the analogy between the two affections, he strongly recommends the adoption of quietness and darkness in the treatment of hydrophobia in man, as these measures are of great value in the treatment of tetanus. All useless interference or attention should be avoided. Everything likely to excite the patient should be rigidly abstained from as far as possible; his questions should only be replied to, and no other talking ought to be permitted. Whatever he asks for should, if believed to be proper for him, be allowed: but nothing should be forced upon him. In proportion as he is tormented by nursing, visitors, inquisitive spectators, or the administration of food, drink, or medicine, the more frequent and harassing are the fits. Seeing the evil effects of bright light in exciting the patient, and well knowing the beneficial influence of darkness in curing or relieving tetanus in the lower animals, the apartment in which he is located should be darkened. Perfect quietude and tranquillity should above all things be rigidly maintained, as the exacerbation of the malady—the return of the spasms and agonising symptoms—are frequent and severe in proportion as the patient is disturbed and excited. All allusion to the disease should be studiously avoided, and no mention should be made of the cause of it; "dogs" and "bites" and "water" or other fluids should not be spoken of. (*Ibid.*, Feb. 3, 1877.)

The Relief of Pain by the Outward Application of Hydrate of Chloral.—Dr. Kesteven states that he has tried the effects of the outward application of hydrate of chloral with great success in neuralgic pains and in cancer of the breast, in cases in which other sedatives and narcotics had failed to give relief. The mode of application is by the saturation of folds of linen of the size of the part to which it is to be used, brought into close contact, then covered with three or four layers of lint covered with oil-silk or spongio-piline wrung out of hot water. The application of the chloral to raw surfaces of course requires some care in the manipulation. The strength of the solution is about four drachms to sixteen ounces of water. The addition of a small quantity of glycerine is advantageous. Chloride of zinc or perchloride of iron can be combined with the chloral in certain cases. (*Ibid.*, Feb. 10, 1877.)

Extracts from British and Foreign Journals.

The Pathology and Treatment of Chorea.—O Rosenbach states that he discovered the presence of several points very sensitive to faradaic, but also especially to galvanic, irritation, and to the pressure of the fingers on the spinal column of a young girl, nine years of age, who suffered from a severe attack of chorea. Similar painful points, the electrical excitation of which produced the most violent reflex movements, were found in the course of the nerves supplying the affected muscles. Rosenbach believes that generally in chorea the spinal cord (and perhaps the brain) is affected, leading to neuritic processes in the nerves. The application of blisters to the different painful points, or of the anode of the galvanic current caused them to disappear, and with their disappearance the spasms ceased. (*Archiv. f. Psychiatrie*, 13, vi. H. 3.)

The Treatment of Cysts with Mucous Contents by Injections of Chloride of Zinc.—M. Anger has made experiments with the object of causing cysts with mucous contents to contract and shrivel by the injection of small quantities of pure fluid chloride of zinc by means of a Pravaz' syringe. His experiments were made on cases of hygroma (præpatellare) and ranula. The first shrivelled up after the injection of three drops of the solution, which however caused a very painful inflammation on two occasions, lasting for two or three weeks without producing any general disturbance of the system. The two cases of ranula pursued a less simple course. The injection of a few drops of a concentrated solution in one instance, and in others of pure chloride of zinc, caused violent pain and extensive inflammation, extending to the submaxillary gland in two instances, and to the subhyoid region and cheek, and yet was still inadequate to prevent a relapse. A fresh injection, which was followed by the occurrence of an abscess in the neighbourhood of the hyoid bone was required to effect a cure. In spite of these not very satisfactory results, M. Anger hopes that injections of chloride of zinc of appropriate strength may be employed in the treatment of large cysts containing mucus, and perhaps even in

o 2

cases of cysts of the ovary. (*Bulletin de la Société de Chirurgie*, and *Centralblatt f. d. Chirurgie*, No. 38, 1876.)

Treatment of Granular Lids by Acetate of Lead.—Dr. Pierd'houy, after having passed in review the very numerous and various methods of treating this disease, expresses himself in favour of Buy's plan, which consists in the application of the neutral acetate of lead in the dry form to the granulations. The acetate should be perfectly fresh, and may be applied lightly with a brush to the granulations after everting the lids; before replacing them the surface should be brushed over with a mixture of oil and glycerine. The reaction is slight, and may be repeated many days consecutively till the granulations are quite flattened down. The plan is well adapted for those who can only be seen occasionally. It has a powerful effect in diminishing the amount of suppuration. It soon produces a cure, and there is no chance of the formation of cicatrices. (*Annali Universali di Medicina*, Décembre, 1876.

Physical Exercise for the Sick.—Dr. Putnam, in a paper read before the Massachusetts Medical Society, on this subject, spoke in high terms of the intelligent efforts of Dr. Ling of Stockholm, and referred to a number of ingenious pieces of machinery that were exhibited in the machinery hall of the Philadelphia Exhibition. He considers judicious physical exercise may legitimately aim at securing the following results:—(1.) The diversion of the mind, to the end of securing the influence of the will in promoting the proper performance of the processes necessary to health, and of turning aside the thoughts from directions in which they may be running to the detriment of the health. (2.) The establishment of a more perfect control of the will over the muscles. (3.) The stimulation of the nervous centres which control the vegetative processes of the body, and perhaps the nutrition of the tissues themselves in some degree. (4.) The furtherance of the circulation of the lymph and of the blood by alternate dilatation and compression of the canals in which they are conveyed, and by acting through the nervous system upon the heart. (5.) Probably the removal of certain distressing conditions due to local congestions, especially in some cases of heart-disease with congestion of the lungs, by increasing the activity of the circulation elsewhere, particularly through the muscles. It is claimed that patients suffering from the dyspnœa attendant upon heart-disease often obtain great relief from some of the passive exercises to be described later, and from a considerable proportion of the most faithful adherents to the treatment. The pulse is said to become fuller and stronger after the applications. The reasons for this may be complex, as the same is said, he does not know if on good authority, to attend the use of the lifting cure. (6.) Possibly the stimulation of the nutrition of various tissues by direct mechanical excitation. (*The Boston Med. and Surg. Journal*, vol. xcv., No. 13.)

The Physiological Action of Sulphate of Guanidine.—MM. Putzeys and Swaen have experimented on the sulphate of guanidine made by heating an alcoholic solution of ammonia with nitro-chloroform. They employed aqueous solutions containing 4 to 1 per cent. of the sulphate with the following results:—

On the Spinal Cord.—Sulphate of guanidine exerts a sedative action on the cord, which becomes more and more marked till it terminates in complete paralysis.

On the Motor Nerves.—At the commencement of its action it excites the terminations of the nervous fibres in the muscles of animal life. The excitation first causes fibrillar contractions, then fascicular contractions, and finally clonic contractions of these muscles. Upon this initial excitation follows a paralytic period in which the irritability of the motor nerve fibres is considerably diminished.

On the Striated Muscular Fibres.—After having produced clonic contractions sulphate of guanidine ends by diminishing the irritability of the muscles in two ways: first, directly; and secondly, indirectly, by the excessive fatigue which inevitably follows the clonic contractions of the initial period.

On Smooth Muscular Fibres of the Pupil it produces well-marked mydriasis.

On the heart the sulphate of guanidine causes marked acceleration of the cardiac pulsation, which is due to excitation of the automotor or intra-cardiac accelerator centres, or to excitation of the accelerator fibres contained in the pneumogastric. Following upon this initial excitation is a period of retardation due to the action of the poison on the intra-cardiac nerve centres. The sedative effects of guanidine are due in part no doubt also to the change it causes in the blood, which becomes black, which again may be referred to the excessive action of the muscular system. (*Journal de Médécine*, Dec. 1876.)

Treatment of Migraine.—According to M. Hervez, of Chégoin, migraine is an arterial neurosis which takes its origin in the great sympathetic nerve, and its seat is in the nervous filaments which accompany the arteries, whilst it manifests itself in the dilatation of these vessels and in the compression of the brain and other organs it produces. The treatment of migraine consists in combating the tendency to periodicity, the pain and the arterial dilatation. M. Hervez finds the following prescription of essential value in fulfilling those indications. He gives every day one pill containing about one grain of sulphate of quinine, one grain of tannic acid, and a seventy-fifth of a grain of aconitina. The dose may easily be increased to three or four such pills daily. (*Journal de Médécine*, Dec. 1876.)

On a Ready Method of Administering Fluids when the Jaws are Firmly Closed.—Dr. Burrall, of New York, says a simple examination, which any one can easily make of his own buccal cavity, will show that posterior to the last molar teeth, when the jaws are closed, is an opening bounded by the molars, the body of the superior and the ramus of the inferior maxilla. If on either side the cheek is held out well from the jaw, a pocket or gutter is formed, into which fluids may be poured, and they will pass into the mouth through the opening behind the molars, as well as through the interstices between the teeth. When in the mouth they tend to create a disposition to swallow, and by this method a considerable quantity of liquid may be promptly given.

Dr. Burrall used this plan for some time, and the simplicity of it made him hesitate to present it in an article; at the same time he supposed it would be new to some practitioners, as he had not noticed it mentioned in any journal. It is one of those apparent trifles which are often very useful in practice. A patient whom he attended in labour was seized with convulsions after the delivery of the head by forceps, and while the body, which was unusually large, was being extracted. Chloroform, which had been discontinued after the emergence of the head, was again administered, with the effect of controlling spasm. The unconsciousness of the patient had interfered with the administration of a dose of ergot, which, he thinks, always precedes the delivery of the placenta, and after the extraction of the body decided hæmorrhage began.

As the patient partially revived, though her jaws were still firmly set, he poured the liquid extract of ergot mixed with water into the cavity formed by her retracted cheek, and the liquid passing into the mouth was soon swallowed. The hæmorrhage continued but a short time.

Dr. Burrall has not found that liquids thus administered run into the larynx, nor does he think that it is likely to occur if too much is not given at once. It is more probable that they would pass over the arched pavement of the tongue into the gutter beside the tongue and larynx. (*New York Medical Record*, February 19, 1876.)

Hæmoptysis, its Relation to Barometric Pressure.—Dr. Nelson, of Kentucky, records an interesting case of hæmoptysis which appears to have been in relation with variations in atmospheric pressure. The patient was a gentleman twenty-one years of age, of fine physical development, and who had always enjoyed good health. The father died of consumption; the patient was accustomed to calisthenic exercises, had had no attack of hæmorrhage previously, nor did he suffer afterwards. The point of interest in the case is the coincidence of the hæmorrhage with the time of minimum barometric pressure during a period of several days preceding and following the attack; this coincidence extending, not only to the day of the month, but also to the time of day. The attack occurred in May, and the readings of the barometer varied from 28·7 to 29·06 inches. Dr. Nelson remarks that it may simply have been a fortuitious coincidence, but he can hardly resist the belief that a causative relation existed between the two events, and he is inclined to think that the increased arterial tension caused by diminished barometic pressure, superadded to the strain of severe exercise the day before, precipitated the catastrophe, which might otherwise have been escaped. Accounts of hæmorrhages caused by ascending mountains are common, although some observers are disposed to attribute them to the unaccustomed exertion rather than to rarefied atmosphere. This explanation, however, would not suffice in the case of aeronauts. (*New York Medical Record*, February 19, 1876.)

The amount of Urea Excreted, an Aid in the Diagnosis and Prognosis of Diseases of the Liver.—In an able paper on this subject M. Brouardel shows that physiologists have of late been more and more inclined to think that urea is, in part at least, formed by and in the liver, and he supplies evidence derived from pathology to support this conclusion. For in severe icterus, in icterus caused by the toxic action of phosphorus, and in certain forms of pseudo-grave icterus urine disappears or diminishes in amount, whilst it does not diminish in simple jaundice. In suppurative hepatitis the urea, as Parkes pointed out, augments at first, but diminishes when the abscess has destroyed a large portion of the organ; and the last statement holds good of cancer and cysts in the liver. It diminishes also in cases of biliary lithiasis, leading to obliteration of the ductus choledochus, in cardiac liver and in fatty degeneration of the liver. It is increased in cases of congestion of the liver. In lead colic the liver retracts and the urea diminishes, but as soon as the colic diminishes the liver regains its normal volume and the urea augments. In transient glycosuria the urea also augments during or at the period of disappearance of the sugar. Lastly, in diabetes the quantity of urea rises to a higher proportion in some instances than in any other disease. It hence appears that in disease of the liver the quantity of urea secreted and eliminated in twenty-four hours is under the influence of two principal conditions: 1. The integrity or alteration of the hepatic cells, and 2. The greater or less activity of the hepatic circulation; and consequently it is possible to utilise the variations in the proportion of urea eliminated by the kidneys, provided these are healthy, as a means of establishing the diagnosis and prognosis of lesions of the liver. (*Archives de Physiologie*, No. 5, 1876.)

On some New Tests for Bile Pigment.—Dr. Walter Smith, in summing up the results of some observations made by him on bile tests, states that it would appear that the value and delicacy of the nitric acid test are less than is commonly supposed, although it is depended upon in delicate physiological investigations, and that it is desirable to have at command some supplementary tests for biliary pigment which shall be easy of execution and free from fallacy. Four test-liquids seem to answer to these indications, viz., tincture of iodine, ferric chloride, peroxide of hydrogen, and the acetic or phosphoric solution of peroxide of lead. The two latter liquids possess over the former the advantage of being themselves colourless, whereby any change of colour produced in testing is more readily appreciated; and the phospho-plumbic solution especially promises well as a delicate re-agent. Peroxide of lead has been utilized in experiments on bile (Maly), but peroxide of hydrogen and ferric chloride have not, Dr. Smith believes, been used by other experimenters, and he ventures to hope that physiologists and clinical observers will test their limits of usefulness. With a fresh supply of material he proposes to study more closely the action of the iron, lead, and hydrogen peroxide tests; but as the clinical experiments have been chiefly conducted with the iodine test, he in conclusion mentions the reasons which seems to him to recommend tincture of iodine to the notice of those interested in such matters. 1. A single re-agent always easy to obtain is alone necessary. 2. The test-liquid is not corrosive. 3. A single definite colour is produced with the bile pigment. 4. The colour is sufficiently persistent. 5. From the less powerful chemical energy of the re-agent, as compared with that of nitric acid, there is a diminished liability to error. No other pigment than bile will yield the characteristic green colour. And lastly, the test fully equals in delicacy, possibly surpasses, the nitric acid test. (*Dublin Med. Journal*, December, 1876.)

Cauterisation of the Pharyngeal Mucous Membrane in Amnesia.—M. Bilot, at a recent meeting of the Academy of Sciences, stated that he had obtained excellent results in certain cephalic neuroses, and especially in amnesia, by cauterisation of the pharynx. He attributes the effects observed to the action indirectly exerted on the superior cervical ganglion. (*Archives Générales de Méd.*, Dec. 1876.)

Aspiration in Strangulated Hernia.—M. d'Outrelepont has practised aspiration in two cases of strangulated hernia. The first case was that of a woman, aged forty-eight, who had a femoral hernia that had been strangulated for two days. The taxis had been tried without effect. A puncture was made with the needle of the aspirator (No. 1 Dieulafoy), and about fifty grammes of serosanguineous liquid was withdrawn; the hernial tumour, though softened, could not be reduced. The symptoms calmed down and the patient left the hospital. Six months after the hernia again became strangulated, but this time taxis was applied within twenty-four hours, and reduction was effected. The second case also occurred in a woman, aged forty-eight, affected with crural hernia. A puncture was made with a No. 2 needle, and a quantity of bloody serum removed, smelling strongly fœculent. The hernia could not be reduced. The symptoms continuing, an operation was performed. On opening the sac the contents of the intestine were seen to escape from the opening made by the needle. The stricture was divided, but the intestine was not relieved: the patient died in a fortnight. D'Outrelepont concludes that in small and tense hernia, in which gangrene is apt to supervene early, aspiration ought not to be tried, except during the first few hours. In large herniæ, in which the progress of the malady is not so violent, aspiration may be tried at a more advanced period. (*Niederrheinische Gesellschaft f. Natur-und Heilkunde in Bonn*, November, and *Archives Gén. deMéd.* December, 1876.)

Antipyretic Action of Cresotinic Acid.—Buss has selected cresotinic Acid, $C_8H_8O_3$, as an antipyretic agent on *à priori* grounds (namely, that, like salicylic acid, it is converted into phenol by carbonic acid gas, and that it is formed by the action of carbonic acid upon cresol), and found his anticipation corroborated by experiment. Kolbe has demonstrated its antiseptic properties. Buss employed soda cresotinate in his researches, and observed that doses of two drachms completely removed the congestive stage—an effect which is also produced by salicylic acid; some degree of singing in the ears was noticed for some hours. He considers it to be as effective as quinine. It lowers the temperature and the frequency of both the pulse and respiration. It produces a sudden fall of temperature in fever, whilst the diminution produced by quinine is slow and gradual. (*Berlin klin. Wochensch.* 1876, No. 3.)

Notes and Queries.

NOTES AND CORRESPONDENCE.

Hay's Aerated Waters.—We have received from Mr. Hay, Hull, specimens of soda, potash, and seltzer water, lemonade, and ginger-beer. The two latter are especially good, having the pure flavour of lemon and ginger without the unpleasant taste sometimes perceptible in these beverages. This ginger-beer is made with essential oil from which the resin has been separated, and its taste is thus much improved. Hanbury and Flückiger, in their *Pharmacographia*, state that it is to the resin that ginger owes its burning taste, but the oil used by Mr. Hay, though pleasanter than the B. P. tincture, with which we have compared it, is still sufficiently pungent to make his ginger-beer slightly stimulant to the stomach as well as the palate.

Ulceration of the Tongue in Hooping Cough.—Dr. Blake informs us that his remarks on this subject in the December number were not intended for publication, but merely to indicate to us that the symptom was not new. Had his notes been intended for publicity he would have had the greatest pleasure in making the *amende honorable* to the writer he criticised.

Austin's Pocket Inhalers.—These consist of a tube filled with hollow rolls of paper, on which the substance to be inhaled is dropped. One end of the tube being then held to the nose or mouth, air charged with the vapour is inhaled at every breath. They are so small as to go into the waistcoat pocket, yet they appear able to charge the inspired air completely with any desired vapour.

Lime-Juice.—We have received from Messrs. Evans, Lescher and Evans, a sample of lime-fruit juice, which appears to us to be of excellent quality. It has a purely acid and aromatic taste, without any of the mawkish flavour which lime-juice sometimes has.

Bibliography.

Introduction of the Metrical System into Opthalmology. By E. Landolt, M.D. 8vo. pp. 30. 1*s.* 6*d.* London: Churchill.

Statistics of Vaccination at the Greenwich Station. By John P. Purvis, M.R.C.S. 8vo. pp. 30. 1*s.* 6*d.* London: Churchill.

Public Health: a Concise Sketch of the Sanitary Considerations connected with the Land, with Cities, Houses, and Individuals. By Edmund A. Parkes, M.D., revised by William Aitken, M.D. Crown 8vo. pp. 80. 2*s.* 6*d.* London: Churchill.

Post-Mortem Examinations, and How to Perform Them. By Professor Rudolf Virchow. Fcap. 8vo. pp. 86. 2*s.* 6*d.* London: Churchill.

A Manual of Percussion and Auscultation: of the Physical Diagnosis of Diseases of the Lungs and Heart, and of Thoracic Aneurism. By Austin Flint, M.D. Post 8vo. pp. 255. 6*s.* 6*d.* London: Churchill.

Lectures on Orthopœdic Surgery. Second Edition. By Bernard E. Brodhurst, F.R.C.S. 8vo. pp. 268. 12*s.* 6*d.* London: Churchill.

The Climate of Jamaica. By James C. Phillippo, M.D. Crown 8vo. pp. 82. 3*s.* 6*d.*

A Systematic Handbook of Volumetric Analysis, &c. Third Edition. By Thomas Sutton, F.C.S. 8vo. pp. 430. 15*s.* London: Churchill.

Chemia Coartata; or, The Key to Modern Chemistry. By J. Cecil Kollmyer, M.D. Roy. 8vo. pp. 111. 7*s.* 6*d.* London: Churchill.

Clinical Lecture on a Case of Cataract Extraction. By Charles Bell Taylor, M.D. 8vo. pp. 16. 1*s.* London: Churchill.

Manual of Dental Anatomy, Human and Comparative. By Charles S. Tomes, M.A., M.R.C.S. Crown 8vo. pp. 406. 10*s.* 6*d.* London: Churchill.

⁂ Any of the foreign works may be procured on application to Messrs. Dulau, of Soho Square, W.C.;—Williams and Norgate, of Henrietta Street, Covent Garden, W.C.; or Baillière, of King William Street, Charing Cross.

Department of Public Health.

NINE PROPOSITIONS BEARING ON THE ÆTIOLOGY AND PROPHYLAXIS OF CHOLERA, DEDUCED FROM THE OFFICIAL REPORTS OF THE CHOLERA-EPIDEMIC IN EAST INDIA AND NORTH AMERICA.

BY DR. MAX VON PETTENKOFER,

Professor of Hygiene in the University of Munich.

II.

Third Proposition.

Cholera dejecta coming in contact with and drying upon any objects, such as articles of clothing, bedding, and furniture, will retain indefinitely their power of infection. That in this manner a sure transmissibility of the cholera infection is effected, and that a distinct outbreak of the disease may occur by such means at great distance from the seat of original infection.

McClellan commences his proofs with the unanimous expression of opinion made by the Cholera Conference in 1874 in Vienna to this effect: "Cholera can be transmitted by personal effects coming from an infected place, especially such as have served for the sick from cholera; and certain facts show that the disease can be carried to a distance by these effects if shut up so as to prevent free contact with the air."[1] As I was a member of the conference, and have agreed to this, I may state how I was able thus to vote without abandoning my localistic stand-point. I still agree with the proposition of the Vienna conference, but I contest McClellan's third proposition upon the grounds that may be found on pages 27 and 28 of the minutes of the conference.

---

[1] Procès Verbaux de la Conférence Internationale Ouverte à Vienne, le 1 Juillet, 1874, p. 30.

The resolution of the Vienna conference states two facts which may be accepted alike by contagionists and localists. 1. That cholera is transportable from one place to another. 2. That this transportation frequently takes place by the agency both of persons who have suffered from the disease and by those who are healthy. But that the disease can be transported from a focus of infection by those who remain healthy is not doubted even by the contagionists. On the contagionistic view the infectious material proceeds only from cholera patients, whilst for those who hold the localistic view it proceeds from the cholera locality. The reason that something infectious is connected with the sick rather than with the healthy is simply due to the fact that the sick come relatively more frequently than the healthy from infected localities and from the foci of infection of a locality otherwise generally infected. Daily experience shows that even in severely affected towns the several houses are not attacked in equal proportion, and many are not attacked at all. Those who leave true foci of infection consequently not only bring with them more easily and oftener infectious material, but also sicken more frequently during or after the journey, than those who come from the non-infected houses of a place. The latter do not sicken upon the journey even when they have the requisite predisposition to the disease, for they have neither had the opportunity of becoming affected nor of carrying with them the infectious material or germ. I contest McClellan's third proposition, because he considers the dejecta of cholera patients to be requisite for the transportation of the disease, whilst I regard them as wholly innocuous. It may be admitted perhaps that the local infectious material may be better preserved and further transported in such excreta, but they themselves do not constitute the infectious material derived from the sick. The experiment made and adduced by Macnamara cannot be regarded by any inquirer as a proof that in the desiccated excreta of cholera patients there is any infecting power. Macnamara, who is McClellan's highest authority, has neither done nor proved anything further than that he poured a fresh cholera evacuation on fine sand and dried it in the sun. "The mass was inclosed in a packet and carefully preserved. After the lapse of seven years a small quantity of this earthy-looking material was mixed with some pure water, and again exposed to the sun. Careful examination of the water thus infected showed that there was no perceptible difference between it and water which had been mixed with a perfectly fresh cholera stool. Now if the organic materials of a cholera evacuation preserve their characteristic properties in a mass of dry sand for an indefinite period, and the process of decomposition first begins then only when it comes into contact with water, the same phenomenon may reasonably be expected to occur with other mixtures that are subjected to the same influences. The only essential conditions for the reanimation of the infecting power are warmth and moisture."

Macnamara, however, made no experiments on infection with his elixir.[1] That such a negative experiment should be mentioned at all by McClellan is sufficient evidence that he is not familiar with experimental investigation. It can scarcely be denied that, if Macnamara had taken the fæces of a healthy person, or any other organic impurity, and preserved it for seven years, he would have obtained the same result as he obtained with the cholera stool.

But, independently of this kind of evidence, the contagionistic theory must be given up, not only on account of the absence of fundamental facts resting on irrefragable proof in particular cases, but rather, as already mentioned, on quite general grounds, which present themselves in regard to the migration of cholera generally; and we must still admit that man spreads the disease by intercourse with cholera infected localities, though we may not know how, and this is the point we must first endeavour to ascertain. The reason that the contagionistic view has so long occupied a prominent position rests upon simple grounds. It was easy to admit that the cholera germ was contained in the excreta of the sick, and to deny the influence of intercourse and locality. I myself for some time upheld this view, especially because by this means the generally admitted dependency of cholera on local causes, in addition to the influence of intercourse, is most easily explained. I asked twenty-three years ago, What does man bring by his personal intercourse generally to the soil of the locality? and believed that I answered satisfactorily when I said, His excreta. However plausible this answer may be to many, the further investigation of facts bearing upon this semi-contagionistic standpoint soon converted me to the localistic view. I now see that we have to investigate more closely not only the local and periodic causes, but also the kind and mode of transportation of the cholera infection, or of its germ, from one place to another. I have expressed myself clearly on this point not only in my "Research on Cholera in Ships and the Objects of Quarantine,"[1] but also in the Cholera Conference held in Vienna in 1874, and this conference has as unanimously supported my advice, that some lines of intercourse by sea should be investigated in regard to the introduction of cholera more carefully than heretofore, as they did the resolution already cited by McClellan.[2]

---

[1] Macnamara has omitted to mention what differences he sought to discover. He only says in his work, p. 398, "It could not be distinguished from a fresh cholera stool, and I have little doubt it possesses all its deadly properties. In the same way the organic matter may be preserved on clothes." That is all.

In support of his third proposition, McClellan calls special attention to three cases in which, according to his view, the cholera-infection material contained in chests and boxes of emigrants from Europe brought across the ocean was introduced into the New World on their being unpacked. These cases are therefore of remarkable interest.

The first case[3] occurred at Carthage in Ohio. A family (Tent Have) came out of Holland by Rotterdam and Liverpool in the steamboat *City of Limerick*, reaching New York on the 5th July, 1873. On the 6th July they left New York, travelled by Baltimore to Cincinnati, where they arrived on the 9th or 10th of July, and slept in a station-house. They travelled by the first train to Carthage. On the 13th July the baggage arrived, which had not been unpacked since the departure from home (Tubbergen), on the 31st May, 1873, and was now opened. The examination in the Custom House of New York appears therefore not to have been strictly conducted. On the 15th of July the disease broke out in this family, and between the 15th and 23rd of July the father, mother, sister, and five children died, only two children remaining alive. The family Tent Have were the first cholera cases in Carthage, and it was only after the 21st of July that the disease spread amongst persons who had visited the house of this originally affected family. It is therefore maintained that the family Tent Have brought the cholera from Holland in their baggage, and that they were affected by it when it was unpacked.

---

[1] Zeitschrift für Biologie, Band viii. p. 1.

[2] See Procès Verbaux de la Conférence Sanitaire Internationale Ouverte à Vienne, le 1 Juillet, 1874, p. 390 and 536.

[3] Page 355 of McClellan's Report.

This view would not be altogether improbable if it were possible to establish two facts—first, that the cholera was already before the 31st of May in Tubbergen, and might therefore have been in some way packed up; and, second, that the family could not have been affected in America, on their way to Carthage. But there is no evidence on either of these points. I do not understand how it is that McClellan did not make inquiries as to the first point in Holland. In regard to the second fact, the infection of the family in the course of their journey in America, is not only possible, but even probable. The first cholera cases had already occurred in Louisiana (New Orleans) in February, and some had even been observed as early as the 27th of May in the State of Ohio, in which Carthage is situated; whilst the epidemic in Cincinnati had already commenced in June, where the family had slept on the 9th and 10th of July. The time is quite in accordance with the supposition that the cholera cases in this family may have resulted from infection received in the night-quarters they occupied in Cincinnati. The harass of the journey affords a satisfactory and probable explanation of the circumstance that almost the entire family died. For Macpherson observes in his excellent work, entitled *Cholera in its Home* (p. 29), "that he has often remarked how strongly travelling predisposes to cholera," and Bryden refers to numerous cases showing that regiments are often peculiarly strongly affected whilst on the line of march.[1]

---

[1] Epidemic Cholera in the Bengal Presidency, and Report on the Cholera of 1866-68, and its relation to previous years. By James Bryden, M.D., Calcutta, 1869, p. 180.

This case of Carthage cannot therefore be used as a proof in the sense that McClellan desires to employ it. The second case rests on somewhat better grounds, and deals with a Swedish settlement which planted itself upon Crow River, Minnesota.[1] The account is that in the early part of July, 1873, the family Antonson came from Sweden, and consisted of father, mother, and five children, varying in age from two to fourteen years; accompanying them was a young man who was a friend of the family. The first cases of cholera in the Swedish settlement broke out in this group of immigrants. The day after their arrival, on the 3rd July, the young man was attacked with diarrhœa, which in two days developed into cholera, and was followed by death on the 10th July. On the 6th July a boy of nine years sickened, on the 9th July a girl of eleven years, and on the 12th July a child of two years of age, all of whom died. On the 13th of July the mother, and upon the 16th of July a girl of fourteen years, were attacked, but both recovered. Three other cases occurred in the locality, but in persons who had not visited the house of this family.

The family of Antonson came, it is believed, from Vük in Alfoden, about two hundred miles north of Bergen. All travelled by steamer to Bergen on the island of Rügen, where they waited about three weeks for the departure of the steamer *Peter Japson,* by which they were brought to New York on the 26th June, 1873. From the evidence of the quarantine books, no disease occurred amongst the 298 passengers on board the ship. From New York the family, after staying for half an hour in Pittsburg, started for Grand Haven, Michigan, where they remained over night, travelled the next day across the lake to Milwaukie (Wisconsin), where they remained for half a day and a night, from thence to St. Paul, Minnesota, where they rested for twenty-four hours, and then across Willmar to Crow River, where they unpacked the baggage that they had brought with them from Bergen. During the journey from New York the family lived exclusively upon bread and milk; when they had arrived at Minnesota they had pudding and milk, bu no vegetables or fruit. Cholera had broken out in Bergen before the departure of the family.

---

[1] See McClellan, p. 440.

It would have been worth while making a special inquiry of the authorities in Bergen in regard to the correctness of this last statement.

Now in this case it is maintained that the family had visited no cholera-infected place on the journey from New York, with the exception of Pittsburg, where, however, the cholera first made its appearance on the 1st August. But whether, even if all this be true, the Antonson family were not infected on their journey through America, or whether the infectious material in the house where the Antonson family lived had not already been brought there before their arrival by some one else who did not fall ill there, or at least who did not remain there, are questions which should have been investigated at the time. It is obvious that anyone who rests on the contagionistic standpoint may boldly maintain that the family might have been infected on their journey from New York to Crow River. The journey was made partly in railroad cars, and partly in steamboats. McClellan takes the opportunity in laying down the third proposition, which he seeks to support by the Crow River case, pp. 49–53, to speak of the thousand dangers and chances of being infected by cholera in a railway car or steamboat, even when these travel to and fro in uninfected districts. It is only necessary that in the car in which the family travelled, there should have been at the same time or shortly, before, some individual who had come from a district where cholera was prevalent, by which he was already attacked, and this person need only have suffered from the premonitory diarrhœa, or have some dessicated cholera germ about him, to have infected those in immediate contact with him. If a single member only of the Antonson family, perhaps only the young man who belonged to them, had become infected in the course of the journey by one of the thousand accidents, which the contagionists are always flaunting before us, he might again have infected all the other members of the family, or they might have infected one another, and nothing remains inexplicable except that the cholera essentially limited itself in Crow River to a single house epidemic, attacking no other domiciles, although there was free intercourse, and no mention is made that disinfecting means were employed. The three persons moreover who were attacked by cholera in Antonson's house might have infected others. Hence this case of Crow River must also be regarded as one *sub judice.*

It is different again with the third case, which broke out amongst Russian immigrants in Yankton in Dakotah.[1] In the course of the month of August, 1873, the first draught of Russian emigrants, estimated to have numbered altogether 2,400 persons, arrived at Yankton, and were received into and protected in empty houses of the town. Cholera broke out amongst them on the 24th August, and between 25th August and 15th September there were forty-two cases, with twenty-nine deaths. The cholera plague appeared to have extended to the other inhabitants in a few cases only. Disinfection was applied in the form of sulphate of iron to the graves, bedding and clothing were burnt, even the bodies were placed upon sulphate of iron in the coffins, and it was believed that by this means the town was preserved. In November, 1874, McClellan himself arrived at Yankton, but was unable to discover anything further of importance beside that which has been just stated, except that he ascertained that the cholera often existed at Odessa, from whence a large portion of the emigrants came, and that it had been prevalent that year at the time of their departure. In regard to the various routes taken by the emigrants, nothing was made out. At a meeting of physicians which took place at Yankton, and was held during McClellan's visit to that town, these facts were established, but it was also unanimously admitted that the same disease had recurred in the summer of 1874, but had only attacked a single American family, whilst a number of fatal cases had occurred amongst the Russians. McClellan is of opinion that if the Russian emigrants and the things they brought with them had been disinfected on their landing in 1873, the outbreak of cholera would have been prevented.

I regard this case as indeed not one *sub judice,* but as one out of court altogether on account of inadequate proof.

McClellan and Woodworth attribute great importance to these three cases, and they will no doubt influence the opinions of many. On closer investigation, however, they will be found to lose all their value. In the first place, it is very suspicious that all three occurred in July and August, when the cholera had already become widely disseminated in the United States, whilst emigration was most active in March and April. This circumstance alone might have suggested caution, and in addition it may be observed that of the three cases adduced, only one, that of the Swedish family Antonson, can sustain even the most superficial criticism, the two others failing entirely. I shall therefore examine the case of Antonson more carefully.

---

[1] See McClellan, p. 462.

For one who is even not a contagionist it is also very conceivable that infectious material might have been introduced by the family into their baggage from some focus of infection in Europe, and that it had only come into contact with them when the unpacking was performed in America, because it is admitted, nay, even apparently demonstrated, that the family had come into contact with no infected place in their journey from New York to Crow River, that is to say, in America. But in this case the other cardinal fact requires to be established beyond all suspicion or doubt: namely, that the Antonson family had come from an infected place in Europe where they might have packed up the cholera poison with their luggage. But this is exactly the point on which there is no evidence. McClellan simply states that he heard from Dr. Frost, what Dr. Frost, who had been called thirty miles to the treatment of the last cases in the family, had been told by father Antonson, which was only to the effect that cholera cases were present in Bergen before their departure, and that since his arrival in America he had heard of the death of some of his friends from this disease.

Now there are many Bergens, but it is stated that this Bergen was on the island of Rügen in the Baltic Sea. Even this cannot be understood, for this Bergen lies in the middle of the island, and is not a seaport town; still, the family might have lived in this town, and there have packed their baggage, and consequently might have travelled with it to the shore, and thus have carried it on board. It is therefore only a question whether this Bergen was suffering from cholera at the time. To settle this point, I wrote to my friend Dr. Hirsch in Berlin, who had worked as member of the German Cholera Commission upon the Cholera Epidemics of 1873 in North Germany, and to whom all reports upon this subject were forwarded. The island of Rügen, it appears, belongs to the Province of Pomerania in Prussia; but during the year 1873 not one single case of cholera was reported as occurring in Bergen, nor even in the whole island of Rügen. Professor Hirsch suggested that the place alluded to might be Bergen in Norway, which is really a seaport town. The name of the place, Vük—probably incorrectly written instead of Vike—is in Norway and belongs to the district of Trondhjem. Bergen in Norway is again a more likely starting-point for a Swedish emigrant than Bergen in the island of Rügen. I was of the same opinion, and therefore wrote to Dr. Berlin, the Director-General of the Medical Department in Stockholm, who was a member of the Cholera Conference of 1874 in Vienna. Dr. Berlin replied that the official reports on health and medicine in Norway for the year 1873 [1] showed that in this year only twenty-two cases of disease, with ten deaths, occurred from Asiatic cholera in the whole of Norway, of which somewhat more than half came from Bergen. On page 74 of the Report in the section treating of cholera in Bergen are the following remarks:—"Bergen: Thirteen cases of Asiatic cholera occurred here, eight of which proved fatal. The disease first appeared in the month of September with three cases, and the rest occurred in October." I could only conceive now that perhaps through some mischance the official notice on cholera in the island of Rügen had not been received by Professor Hirsch. To make quite certain of this point, I wrote to the magistrate of the town of Bergen on the island of Rügen, who replied that in the year 1873 no case of cholera occurred either in Bergen or elsewhere in the island, and that no one was acquainted with the residence of a Swedish family Antonson in Bergen.

It is therefore impossible that the family Antonson, whether they come from Bergen on the island of Rügen, or from Bergen in Norway, could have packed up any cholera contagion in the month of June, 1873; and it appears that some one has played off a hoax upon Dr. McClellan.

In the meanwhile it is obvious that the cholera outbreaks in

---

[1] Beretning om Sundhetstillstanden og Medicinalforholdene, i Norge i. 1873.

Carthage, in Crow River, and in Yankton cannot be attributed to infectious material brought by emigrants from Europe in their luggage directly into the heart of the United States.

The three cases of emigrants remind us of the contents of the 22nd chapter of "The Cholera during the Quarantine in New York," p. 466. The report is a short one, but very weighty. The town and state of New York were not affected during the epidemic of the year 1873. According to the lists in the emigrant and harbour offices, in the year 1873 no less than 316,956 persons embarked in 760 emigrant ships to different parts of the world, of whom 266,055 came from Europe, amongst which 113,920 were from England, and the remaining 152,135 from the other parts of Europe. As England was free from the cholera epidemic in 1873, only the latter 152,135 can be counted as coming from cholera districts.

What now were the cases of cholera that were affirmed to have arrived in New York amongst the 400 vessels that transported the 152,135 persons from cholera districts? The reply is that only four ships had cholera cases on board, and these were—

I. The steamer *Westphalia*, which arrived on the 10th September from Hamburg, leaving that port on the 27th August. Two persons died of cholera on board on the 1st and 3rd of September. On the arrival of the vessel in New York nine persons were attacked, who were transferred to the hospital on Dix Island, where one died, whilst the remainder recovered. All the cases on board the vessel occurred in two German families, who, it is thought, were infected before embarking.

II. The steamer *Ville du Havre*, which arrived on the 24th September, and was kept in Quarantine at New York. It started from port on the 12th September. On the 16th a gentleman from New York was attacked with cholera, died, and was thrown overboard during the night.

III. The steamer *Washington*, which arrived on the 26th October from Stettin, having left that town on the 6th October. It carried 298 passengers. On the 21st October three fatal cases of cholera occurred.

IV. The steamer *Holland* arrived on the 28th October, after leaving London on the 18th September and Havre on the 20th.

Ten days before arriving one fatal case of cholera occurred. The body was at once thrown overboard.

No other cases occurred, and hence in a total number of 152,135 passengers coming from districts affected with cholera in Europe there were eight fatal cases, or 0·0052 per cent. This is a still more favourable proportion than occurred in the emigrant line between Calcutta and Mauritius, which I have discussed in my treatise on *Cholera in Ships,* and in my book on *The Mode of Dissemination of Cholera in India.*[1] We see therefore that the emigrant ships in the Atlantic Ocean are as unfavourable a soil for cholera as the Coolie ships in the Indian Ocean. It might be supposed that this favourable result was obtained on the Europe and New York line in 1873 by disinfection and isolation, but the same fact was observed when neither disinfection nor isolation were employed. In all instances there were special and exceptional vessels in which epidemic outbreaks occurred, as, for example, in the *Virginia,* the *England,* and the *Franklin.* These caused a great outcry, but people forgot to ask how many ships took the same course under similar circumstances, and what was the proportion of cholera cases that occurred on these. In fact, measures of disinfection and isolation cannot be brought into question in the line between Calcutta and the Mauritius. Common sense moreover shows that the adoption of these measures on board a ship can never protect the passengers from an attack even if they are applied immediately upon the first occurrence of a cholera case, if it be admitted that the cholera is communicated by those affected with it. For before isolation or disinfection is employed some one must have been affected, and till this is evident the close contact necessarily existing upon ships must have already afforded sufficient opportunity for the infection of others. Moreover, if ships are now and then found, as exceptionally occurs, to suffer from violent epidemics, these must have other grounds than that cholera patients are on board, as we see in the case of land hospitals which receive cholera patients, yet do not suffer from a house epidemic. I can only repeat what I have stated five years ago in my treatise on *Cholera in Ships.*[2]

---

[1] Vertbreitungsart der Cholera in India mit 16 Taf. Fr. Vieweg v. Sohn in Braunschweig, 1871.

[2] Zeitschrift für Biologie, Band viii. p. 61.

"The great fact now before us is briefly this, that *experience shows the infectious material of cholera is seldom transported from land to ship-board, though in rare cases enough is taken to produce a violent epidemic, as might also occur on land. Now what is the difference between ships which carry infectious material on board without its being recognisable, as in the case of the* Grecian *on the one hand, and the* Rhone *and others, that do not act infectingly, which constitute by far the greatest number? I suspect this difference might be ascertained if the subject were calmly, earnestly, and intelligently investigated.*" The search for the causes of cholera in ships can never be successful, for it is sufficiently evident that the causes do not lie in them. It is impossible to find a thing if it be looked for in a direction in which it does not lie, however industriously and precisely the search may be made.

One of the principal arguments adduced by the contagionists in support of their view has up to the present time been the presence of cholera in ships, and they regard it as a circumstance opposed to the localistic origin of the disease, that ships have frequently been attacked by cholera on the high seas when distant from land, soil, and soil water. But the more precisely such outbreaks are investigated, so much the more agreement and analogy may be found with the behaviour of intermittent fever, and so much the less with diseases like syphilis, measles, and scarlet fever, which are actually communicated by the sick, diseases which are really contagious. It is the great defect in the reasoning of the contagionists, that they have only kept those analogies in view which cholera offers to infectious diseases, and have consequently overlooked the fact that analogies also exist between contagious and miasmatic diseases, like malarial affections. If of the crew of a ship only a part stepped on a malarial shore, whilst the other part did not do so, these last are no more likely to be infected by those returning from the land and infected with malaria than are, as a rule, those who are brought into relation with cholera patients on board ship. The rare exceptions to this almost universal rule are explicable on the transportability of the cholera infection, a peculiarity that is either not possessed at all by the malarial poison, or in a much lower degree. It is also stated that cholera poison taken into the organism has a stage of incubation, which is as well defined as the poison of syphilis, measles, or scarlet fever, which shows that the cholera poison must first increase and develop in the bodies of the healthy in order to produce the disease. But the same is the case with malarial poison. Griesinger[1] admits the existence of a stage of incubation in cases of malarial infection on board ship exactly as it has been observed in the outbreaks of cholera in the crews of ships. If the malarial poison taken in small quantity into the bodies of infected persons must first increase for a period varying from six to thirteen or twenty days in order to produce the symptoms of the disease, the febrile patient must likewise act infectingly in the same way as those affected with measles and cholera. What is ascribed in cholera patients to the intestinal excreta might surely be effected in the malarial cases by the profuse perspiration. But if this be not admitted in malaria, neither can it be allowed that there is a stage of incubation in cholera.

Cholera unquestionably does not stand alone in this respect; yellow fever behaves itself in regard to the transportability of its contagion and its incapacity to act by infection from the sick, in exactly the same way as cholera. Its source is also exclusively the yellow fever locality. The yellow fever contagion is easily and frequently transported from land on board ship, and it may here and there adhere to yellow fever patients who come from a yellow fever locality, but it is as littled developed by the patient as the cholera infectious material by the cholera patient. A sufficient number of proofs have therefore been obtained on this point, and I must refer to the observations of Hirsch,[2] on the mode of dissemination of yellow fever, to my own remarks on the transportation and non-contagiousness of yellow fever,[3] and to what Bandel[4] has recently communicated in regard to the yellow fever epidemic in Monte Video.

---

[1] Griesinger Infectionskrankheiten, p. 16.

[2] Deutsche Vierteljahrsschrift für öffentliche Gesundheitspflege, Band ix. p. 353.

[3] Idem, Band v. p. 375.

[4] Idem, Band viii.

Fourth Proposition.

The specific poison which produces the disease known as cholera originates alone in India, and by virtue of its transmissibility through the persons of infected individuals, or in the meshes of infected fabrics, the disease is carried into all quarters of the world. Cholera has never yet appeared in the western hemisphere until after its route of pestilential march has been commenced in the eastern world, and its epidemic appearance upon the North American continent has invariably been preceded by the arrival of vessels infected with cholera sick or laden with emigrants and their property from infected districts.

In regard to the fourth proposition I have little to say, for I also admit that the cholera germ may be disseminated by the agency of human intercourse, and only object to the view that cholera patients produce these germs and augment their number. Upon this point enough has already been said. It appears the proposition was laid down by McClellan only on account of its special American interest, for there the introduction of the epidemic of 1873 has remained extremely obscure, the epidemics on that occasion having already commenced in New Orleans in February antecedently to any ships containing cholera patients coming from Europe having arrived there, which has led American physicians to inquire whether the delta of the Mississippi might not, like the delta of the Ganges, be a brooding-place for cholera, or whether the germ, acting in 1873 might not have proceeded from earlier transportation. Whether the explanation given by McClellan is sufficient for the American savants, I do not know; it is not my business to oppose it. But since McClellan takes the opportunity to speak of the behaviour of cholera in India, I must observe that he is very imperfectly informed on this subject. He cites exclusively Macnamara and Murray, authors who view the matter in the same light as himself, whilst he ignores the far more thorough and complete investigations of Macpherson, Bryden, Cuningham, and others, to whom I shall leave it, if any of them are so disposed, to debate with McClellan on this point. Bryden, for example, has arrived at a quite different result from Murray in regard to the influence of the religious festival in Hardwar upon the dissemination of the epidemic of the year 1867.[1]

FIFTH PROPOSITION.

The respiratory and digestive organs are the avenues through which individual infection is accomplished; through the atmosphere of infected localities cholera is frequently communicated to individuals; water may become contaminated with the specific poison of cholera from the atmosphere, from surface washings, from neglected sewers, cesspools, or privies, and the use of water so infected will induce an outbreak of the disease.

McClellan states that the greater number of observers are in accordance in thinking that the cholera poison gains entrance into the body by infected air, infected water, and by infected food. Dr. Murray alone in his "admirable treatise on the mode in which cholera is communicable," states that it may also enter through the skin.

McClellan demonstrates in the most facile way, that cholera poison is communicated by the air, by merely stating that excreta and cesspools may act infectingly. If we had no other proof I would maintain that cholera is never communicated through the medium of the air, for in cases where the influence of the excreta and their contents upon the sick has been carefully investigated, opposite results have been obtained, as we may see in comparing the relative numbers of the attendants upon cholera patients who are attacked, with those of the cholera patients themselves. Port has divided the cholera patients in the garrison during the last cholera epidemic in Munich according to their position, and finds that in all the barracks of Munich the fewest cholera cases occur in the room next the privies.[2] McClellan has made no systematic observations on the influence of the excreta, he simply takes their influence for granted, for as it cannot otherwise well be, there is a frequent coincidence between persons being attacked and the fact of their having used these closets, whilst he considers it to be proved that the cholera poison is contained in the excreta. Whosoever believes this can scarcely doubt that infection may take place through the vapours arising from the privies. McClellan only counts those who use the privies, and are attacked by cholera, and not those who use them and do not suffer.

---

[1] See my Verbreitungsart der Cholera in Indien.

[2] See Berichte der Choleracommission des deutschen Reiches, H. iv. p. 86, und iv. 66.

The same may be said of the drinking water, which to the majority of people is an *à priori* article of faith. I must refer on this point to my critical treatise, *Is Drinking Water a Source of Typhus Epidemic?* and to Cuningham's third proposition. It may, perhaps, not be superfluous to take this opportunity of putting a few facts together which tell for and against the theory that infection is communicated by means of drinking water.

In support of it are the cholera outbreaks of 1854 in Broad Street, cited by McClellan, and the case of infection by drinking water given by Macnamara. Another case has likewise been lately reported from India by Blanc,[1] with which McClellan was not acquainted at the time he made up his report. I believe I have given due weight to the evidence afforded by the case of Snow, in my treatise on drinking water and typhoid fever, and have shown that the two ladies who were separately attacked in so remarkable a manner at Hampstead, far from the centre of infection in Golden Square, simply, as it was supposed, because they had drunk water at the Broad Street pump, had yet another connection with this centre, whence the contagionists unhesitatingly explain the sporadic cholera cases occurring outside of an infected district.

In Günther's report on the cholera of 1873, in Saxony,[2] a case is given where, in the town of Nausslitz, Mrs. K. and her daughter, just as in Hampstead, Mrs. Ely and her niece, were attacked by the disease without any infectious centre being known to exist, and just as Mrs. Ely's son brought her daily water from Broad Street, so people called daily from Niedergorbitz, which, like Broad Street, was a centre of infection. Those who called in Nausslitz, like Mr. Ely, were not themselves attacked. They did not bring Mrs. K. and her daughter anything to eat or to drink from Gorbitz, but, on the contrary, they came to eat and to drink.

---

[1] *Lancet*, 1875, August 21, p. 276.

[2] Berichte der Choleracommission des deutschen Reiches, II. iii. p. 15.

Yet another case of this kind may be adduced from the same report (p. 20). In Briessnitz lived a charwoman who had to lay out all the bodies of those dying from cholera in Gorbitz, and all the adjoining localities, and who was thus occupied, just as Mr. Ely in his manufactory for gun-caps in Broad Street. The husband of the charwoman was attacked by cholera on the 26th of June and died, remaining the only case in a house occupied by sixteen persons. Briessnitz was not generally epidemically affected, and only a second isolated case occurred on the 26th of August in a house occupied by forty-four persons. The charwoman certainly did not bring any drinking water to her husband from Gorbitz or Wölfnitz; she even maintained in the most positive manner that she brought no washing or other effects from cholera bodies into the house.

In reference to the case of Macnamara, a Review in the *Indian Annals of Medical Science* for January, 1876, contained a very clear and impartial estimate of the American cholera Report of 1873. The reviewer states:

"Macnamara's book on cholera is largely drawn on, and more especially the particular instance in which nineteen men are stated to have drunk water containing the dejecta of a cholera patient, and five to have been attacked by the disease. The whole account of this remarkable event occupies but a few lines in Macnamara's treatise,[1] and yet it forms the basis of a great part of his own conclusions, and has been accepted in Europe, and now again in America, as a crucial proof of the infective nature of cholera discharges. The statement did not attract serious attention in Calcutta, nor would it be deserving of any notice now, but for the ready acceptance which it has gained in all parts of the world. There are few things more remarkable in the literature of cholera than the unquestioning manner in which this acceptance has been rendered. The facts were doubtless very convincing to Dr. Macnamara, but before they can be accepted as evidence of any value, it is essential that they should all be thoroughly sifted, so as to avoid all possibility of mistake. The date and precise place of occurrence, the history of cholera in the vicinity, the previous history of the persons afterwards attacked, the precise symptoms of the patient from whom the dejecta which found their way into the water had been derived, the exact character of the ailment from which those attacked suffered, whether it was true cholera or not, the number who died, and many other details must be carefully scrutinised before the accuracy of the statement can be admitted, or any conclusions based on it accepted. In any other department of science, such a course would have been insisted on before a bare assertion, no matter how positive, was received as a fact, but in medicine there is far too little of strict logical induction, and statements, if they but chime in with the doctrines of the day, are very readily, not to say greedily, devoured. Even if all the facts were substantiated beyond a shadow of doubt, there still remains the very intricate question, how far the attack of the five men is to be ascribed to the water contaminated with cholera discharges. Was this the one only condition which distinguished these persons from all the others living beside them, and even if it be so, what proof have we, that similar results might not have been produced equally well if the water had been contaminated only with ordinary organic matter in a state of decomposition?"

---

[1] It may be appropriate in this place to adduce in its integrity the case, so frequently cited, which was reported in Macnamara's *Treatise on Asiatic Cholera*, p 196:—

"I may mention the circumstances of a case which occurred in another part of the country, but in which the most positive evidence exists as to the fact of fresh cholera dejecta having found their way into a vessel of drinking water, the mixture being exposed to the heat of the sun during the day. Early the following morning, a small quantity of this water was swallowed by nineteen persons (when partaken of, the liquid attracted no attention, either by its appearance, taste, or smell). They all remained perfectly well during the day, ate, drank, went to bed, and slept as usual. One of them, on waking next morning, was seized with cholera; the remainder of the party passed through the second day perfectly well, but two more of them were attacked with cholera the next morning; all the others continued in good health till sunrise of the third day, when two more cases of cholera occurred. This was the last of the disease; the other fourteen men escaped absolutely free from diarrhœa, cholera, or the slightest malaise."

I have nothing to add to this clear exposition, but that these may not have been cases of cholera at all, since among five cases there was not one death, and that in the frequently-cited experiment of Macnamara, even if it were cholera, we have only before us one of the numerous cases of *post hoc ergo propter hoc,* and I leave it confidently to thoughtful individuals how far it can be regarded as a proof.

The case communicated by Blanc is deserving of more attention. There is a prison at Yerrowda, in the Deccan, in which, on the 27th May, the first cholera case was observed, followed on the same day by six others, and by thirteen more on the following day. On the 29th there were only two cases, and on the two following days one case each, so that upon the whole twenty-four persons were attacked, of whom three died, and the epidemic then terminated. Closer investigation elicited the following facts. Of the twenty-four patients who were distributed in nine different barracks, and amongst the whole population of the institution, twenty-two belonged to one and the same group of prisoners who had been busied throughout the whole day outside the institution in laying down a street from the prison to the neighbouring river, and the road from Poonah, whilst the other two, of which one was attacked on the 29th May, and the other on the 1st June, were in the immediate neighbourhood of some of the individuals attacked by cholera, and had either slept or eaten with them. The number of persons confined in the prison at this time amounted to 1,279, of which 500 were engaged on the days previous to the outbreak of the disease within the building, and 729 in various ways, as in gardening and in the repair of the building outside of it. And amongst these last, sixty-one had worked on the 24th May, and 134 and 116 on the 25th and 26th May, on the above-named road. In other respects all the prisoners were under precisely similar conditions in regard to food, clothing, and dwelling. It is therefore easy to conceive that the causes of the outbreak of the disease must be sought in influences to which these road-makers had alone been subjected to. Inquiries directed to this point showed that whilst in the days antecedent to the outbreak of the disease sufficient quantities of drinking water had been supplied to the workmen from the prison, this supply of water was insufficient for them when their number was doubled, and water was made use of whilst they were working on the roadway which was brought from standing pools fed from the river. Independently of the impurity of the contents of these pools, due to filth passing into the river from the towns and villages, there was a specific impurity discovered in the fact, that on the 23rd May, five days before the outbreak of cholera, the dwellers in a neighbouring village in which cholera prevailed had thrown the bodies into the river, and had washed the linen and clothes immediately above the spot from which the water had been taken for drinking purposes. Investigation of the suspected water showed that it contained a very considerable portion of ammonia, partly free and partly in combination.

In regard to this case, which upon the whole was well observed, I have no remark to make, except that I fear that it was not ascertained which of the road-makers drank the water from the pools, and which the water that was brought, even if in insufficient quantity, from the prison, or whether all had equally taken of both supplies, that is to say, whether only those were affected who drank pool water, and not also other road-makers who only drank water brought from the prison.

I must further observe, that that which in this case is supposed to have caused the cholera has often been done in India without similar consequences. One of the most striking cases was that which was observed by Douglas Cunningham in 1869, in Rajmahal, in Bengal. The town lies on a tributary of the Ganges, and consists essentially of two parts, Cassim-bazaar and Naya-bazaar. The distance between the two is about an English mile. First comes Cassim, and then lower down the stream, Naya-bazaar, between which is the prison, where on the 10th March the first cholera case occurred. The epidemic attacked Cassim-bazaar with great violence, but Naya-bazaar remained unattacked, although the inhabitants of the latter place had only the water from the river to drink, which came down from Cassim-bazaar; the river at that time contained extremely little water, and the inhabitants of Cassim-bazaar, not only bathed and washed in it, but also buried in it those who died of cholera, with Indian rites.

That the use of pure drinking water does not *per se* protect from an attack of cholera, if those exposed to it remain on a cholera soil, has been frequently observed in India, as the cases which Blanc had before him show. One, which is stated with experimental exactness, I have given in my *Researches on Cholera* *in Malta and Gozo.*[1] The Governor of Malta at that time, Sir Patrick Grant, commanded, at an earlier period in India, in Bangalore, and as I took the opportunity of remarking to him that I was opposed to the view of his fellow-countrymen who overestimated the influence of drinking water upon cholera epidemics, he replied that from his own experience in India he had come to be of the same opinion. And he then made the following observation to me: Bangalore is a great depot for troops in Mysore, South India, and the movement of troops between Bangalore and Madras was much dreaded at certain times, especially since the cholera was epidemic in a river valley through which the route lay. At such times the march of the troops through the pass was avoided as far as possible, but it happened, at the unhealthy period, it was necessary to send on one occasion 400 men from Bangalore to Madras. At that time there was no railroad in this part of India, and the length of the valley was too great to permit of its being passed through without halting. At that time the theory of the danger of drinking water had been transplanted from England to India, and was generally accepted. Sir Patrick Grant determined that, cost what it might, he would make the unavoidable contingency of this movement of troops the subject of a decisive experiment, and see whether he could not with the aid of pure drinking water transport his troops without injury over this poisonous valley. Strict orders were given that when the troops arrived at this valley they should avoid all intercourse with the inhabitants and their dwellings, and that, with the exception of the air, they should take nothing in the district, and especially no water, a sufficient supply of which was brought from healthy districts. Sir Patrick Grant assured me he was satisfied that strict attention was paid to his order in every respect. He could pledge himself for the conscientiousness and honour of the officers he had selected for this march, who were thoroughly made to understand a highly important point was being worked out, the conclusion drawn from which might be of the greatest value, not for the Indian army alone, but for mankind generally. The result however of this rest in the valley of Palar was quite in accordance with previous experience in regard to cholera, for in the march to Madras he lost eighty men from the disease. From this moment Sir Patrick Grant ceased to be an adherent of the drinking water theory.

---

[1] Zeitschrift für Biologie, Bd. iv., p. 441.

We need not go to India to observe cases which are exactly similar to those which Blanc has reported of the prisoners in Yerrowda, for they may be found likewise in Germany, and indeed wherever we cast an unprejudiced eye. I will report one from my own experience, which differs in no important respect from that of Blanc, except that instead of India it occurred in the Palatinate of the Rhine, that instead of prisoners they were paupers, that these, instead of working in a street, dug a potato-field, and that in this case the drinking water could not be held to throw any light on the subject.

The town of Speiers on the Rhine suffered, as is well known, from cholera in the summer and autumn of 1873. The epidemic limited itself in a very remarkable manner to the lowest part of the town, to that part which lies on the Speierbeck, and raged with extraordinary violence. In that part of the town which is situated on a higher level only scattered cases occurred, and it escaped the epidemic. In this higher part of the town was the workhouse or almshouse for the poor and old people who belonged to the town. It was also a hospital, and in the beginning of the epidemic was even used as a cholera hospital. The patients in the hospital remained free from cholera, though two cases occurred amongst the paupers and attendants, which might not unreasonably be explained as the result of intercourse with the infected parts of the town; there were about 200 male and female paupers in the institution, and for a long time no epidemic appeared amongst them, until it suddenly broke out at a late period in October. The order of the attacks in the hospital were as follows:—

On the	19th	September	1
,,	2nd	October	1
,,	12th	,,	1
,,	14th	,,	1
,,	16th	,,	2
,,	17th	,,	1
,,	18th	,,	3
,,	19th	,,	1
,,	20th	,,	3
,,	22nd	,,	4
,,	23rd	,,	3
,,	24th	,,	2
,,	31st	,,	1

Twenty-four cases in all, of whom seventeen died. Since the periodic course of the disease from the 4th to 24th of September presents quite the aspect of an ordinary house epidemic, I sought in the first instance to discover some common cause of infection in the institution itself, similar to that which I had so clearly discovered in the prison in Laufen. The nourishment, the drinking water, and other arrangements in the house proved to be the same for all, and there was thus nothing to account for the outbreak. I next proceeded to arrange the cases according to their sleeping-rooms, the position of their beds, the locality of their works, &c., but the cases were quite regularly distributed through the whole institution. At length the hospital superintendent, Vogel, called my attention to the fact that the great majority of the male and female paupers who had been attacked and had died, had this in common, that they had worked in collecting the potatoes in the fields, and had brought them into the cellar. He noticed from the commencement that these paupers formed a certain separate class in their society, since only those were so employed who could still work, and who wished to obtain a little extra pay. I obtained from him a list of all the paupers who had been engaged in collecting potatoes. They included thirty-three persons, seven women and twenty-six men. Of these thirty-three persons twenty were affected with cholera and cholerine, three slightly, and seventeen severely, and ten died, two women and eight men. The few cholera cases that occurred besides in the institution were partly persons who had much intercourse with the epidemically-affected cholera locality where they worked in the houses, and partly those who were brought into immediate contact with the potato-diggers, in living and in sleeping; presenting in this respect an exact analogy with the prison at Yerrowda. There were, however, no springs in these potato-fields, so that the disease could not be referred to the consumption of infected water. The road from the institution to the fields did not lead through the epidemically-affected part of the town. It was not, moreover, the time of year when thirst is much experienced. The houses in the immediate neighbourhood of the fields where the people might have drunk something were free from cholera. The house epidemic broke out after the paupers had worked on a certain plot of ground, called the Lochacker, the name of which indicates that it lies in a hollow as compared with the surrounding parts, and it is in fact an ancient sand-pit, and it appeared that in this plot many potatoes were spoilt, being affected with the so-called potato disease, and therefore required to be again sorted in the institution. It did not occur to anyone in Speiers to refer the epidemic amongst the paupers employed in potato digging to the drinking water. Since the drinking water theory was not applicable to this case, the clever idea occurred to one physician, and to one only, that the disease attacking this group of men which was an undeniable fact, was due to brandy. The potato-diggers must have been hale-fellows-well-met, and the small remuneration which they had for the harvest afforded them the means to satisfy their thirst for brandy. There must be some fluid, it appears, by means of which we take in the cholera poison, and the drinking water theory has a rival in the brandy theory.

Since the drinking water theory admits that water rendered impure by the excreta of patients suffering from typhoid fever may produce an epidemic just as water rendered impure by the excreta of cholera patients, it may be worth while to mention here a few cases of outbreaks of cholera which have been frequently but erroneously considered to afford proof of infection taking place by means of drinking water. In Zürich there was a barrack which was simultaneously occupied by infantry and artillery troops, and where the same mode of living was adopted by all and the same drinking-water consumed. Typhus epidemic broke out amongst the infantry, but no case occurred amongst the artillery living in the same barracks. The only difference that could be ascertained to exist between the two bodies of troops was that the infantry had a different parade-ground from the artillery.

On the parade-ground of the infantry troops was a spring, near which was a stinking pool. This was sufficient to lead many to think that the pool contained typhus poison, which, having reached the spring, was drunk in the water drawn from it by the soldiers in the intervals of the drill.

A typhoid epidemic occurred in the summer and autumn of 1869 amongst the prisoners of the house of correction, Rebdorf, at Altmühl. The prisoners were partly occupied in various trades in the institution, and partly with husbandry in the fields and meadows. The valley of Altmühl had previously suffered from a very great inundation. The epidemic was limited exclusively to the workers in the fields, and amongst the warders of the institution those only were attacked who overlooked the prisoners in the fields. This case also was with equal accuracy accepted by those who held the drinking water theory as a proof of its accuracy, although it was not ascertained whether those who were affected had really drunk the Altmühl water, and although it was established that the warders at least had not drunk the Altmühl water.

In regard to this succession of cases, from Yerrowda in India to Rebdorf in Bavaria, this only is certain, that both in cholera and in typhus epidemics local influence must also be regarded as operative. The locality may communicate something infecting not only to the water but also to the air and other objects which are associated with it. It is purely arbitrary to consider this something as being connected with the water alone as long as the water does not appear to be completely separated from all other local influences. Whilst the workers on the road at Yerrowda, and the infantry troops in Zürich perhaps drank a litre of suspected water, they inspired some 1,800 litres of air in the same place. If now as many cases have been observed as is actually the case showing that epidemics of cholera originate when absolutely no water from the locality has been consumed, we have no right, in all those cases where water and air were coincidently ingested in one locality, to refer the infection to the drinking water alone. To the same series belongs the case mentioned by McClellan, page 59, from the market in Lebanon.

As water constitutes a part of the local influences, it will appear in many cases sufficient to afford an explanation where local influences appear to be of importance, especially since in general people are inclined to take *pars pro toto.* But closer investigation proves only too frequently, both in cholera and in typhus, that the drinking water is not the essential reason of the unhealthiness of a locality. The idea that one has taken in some infectious material with the water at a certain place suggests itself readily to every one, and from remote antiquity it has been believed, when an epidemic broke out, that the springs were poisoned. Since springs and other water supplies constantly coincide with epidemically-affected districts, streets, institutions, and houses, it is very natural to ascribe the infection to the water. In evidence of the fact that even in cases where those who believe in the drinking water theory feel themselves to be on sure ground, I shall finally adduce a circumstance that has been very recently ascertained.

In Würzburg-am-Maine the garrison was partly located in barracks in that part of the town which lies on the river banks, and partly in the fortress of Marienberg lying high above the river. A typhoid epidemic broke out in the Würzbürger garrison in the year 1874-75, which was limited exclusively to the troops in the Marienberg, whilst not a single case occurred in the barracks of the town. This consequently, from the similar mode of living and occupation of the troops, must have had a local cause. It was believed that no other difference could exist but that different water had been drunk. The barracks in the town were supplied with water exclusively from the town reservoirs, and the town itself moreover did not suffer from any typhoid epidemic. On the other hand, the fortress was only partially supplied by this water, mixed with water from the hill spring, which rises at the foot of the Marienberg, it was supposed that the water of the hill spring had been rendered impure by excreta from the fortress, and had thus occasioned a typhus epidemic.

I was officially directed by the General commanding in Würzburg to subject the two waters, that supplied to the town, and that from the hill spring, to a comparative examination in my hygienic Institute, and to give my opinion as to whether or not the suspected spring supplying the Marienberg fortress should be closed.

I was unable to discover any essential difference between the two waters which justified such a measure, but in accordance with the general impression on the subject, it was ordered to be closed, and directions given that the Marienberg fortress should be exclusively supplied with the ordinary water of the town, none being taken from the hill spring. In the following year, 1875-76, when the typhus epidemic had disappeared from the

Marienberg, and the soldiers had for a long time all used the same water as the soldiers in the town barracks, a still worse typhoid epidemic broke out in the garrison, and this was again exclusively limited to the soldiers in the Marienberg, whilst the troops in the town barracks, as well as the inhabitants of the town of Würzburg generally, remained free. Now at length every one was convinced that the drinking water could not have been the local cause, and felt themselves compelled to regard the conditions of the locality as the cause of the disease apart from the drinking water. When I say, in accordance with Cuningham, that cholera epidemics do not proceed from the excreta of cholera patients finding their way into drinking water, I have said as little as he that impure drinking water can be drunk without harm, or that pure drinking water is of no value. On the contrary, I rate this value far higher than those who hold the drinking water theory, for I maintain that *pure drinking water is not only necessary for our health during a cholera period, but also at all times.*

SIXTH PROPOSITION.

The virulence of a cholera demonstration, the contagion having been introduced into a community, is influenced by the hygienic condition of the population, and not by any geological formation upon which they may reside.

In opposition to the first part of this proposition against the influence of individual disposition I have, of course, nothing to observe, but the second part denies the local influence, and thereby expresses an opinion which only they can regard as true who have never had occasion to make an earnest investigation of the mode in which epidemics spread over large continuous tracts of country; and no doubt the gentleman who, in the course of 238 days, was able to report upon the cholera as it affected 264 localities, saw nothing but cholera, and could not, so to speak, see the wood for the trees. I am anxious to know how McClellan explains the dissemination of epidemics, and their frequently sharp territorial limits, both in and out of India; how he explains the periodic or continuous immunity of places like Lyons, Versailles, Birmingham, Salzburg, Innsbruck, Stuttgard, Frankfort-am-Main, and many others ; or what he has to say upon the point that even in his home, which we call the New World, (which, nevertheless, affords old facts for us), in the year 1873 the epidemic proceeding from the south and from New Orleans,[1] where it only very feebly developed itself, notwithstanding the absence of all hygienic measures, and in spite of the general unbelief in the contagiousness of cholera, ascended through the valleys of the Mississippi and its tributaries with so capricious a selection of places it attacked, in order to concentrate itself in so serious a manner in Kentucky and Illinois, and why it never reached the State of New York ; although so many railways and other means of intercourse from the infected regions here meet ; and why in Chicago, in spite of all the impurities described from p. 213 to 219, and in spite of poverty, the epidemic was limited to such narrow confines. McClellan boldly maintains that New York was preserved from the introduction of cholera from Europe in 1873 by its excellent quarantine. What then preserved the town from the much more probable introduction of the disease from North America through the railway on the land side ? McClellan coolly maintains that the infectious material may have been transported into the heart of America in the baggage of emigrants from Norway, Holland, and the Crimea. Have then those who came into New York in such numbers, and in so much shorter a time by land from Louisiana, Mississippi, Tennessee, Kentucky, and Illinois never had baggage that they packed up in their infected home, and again unpacked in New York ? Surely far more infectious material must thus have entered New York from North America than from the whole of Europe. What has, and what could have been done to prevent it ? Dr. McClellan should study the works of Bryden and Cuningham on India, my work on Lyons and the Bavarian epidemic, the works of Reinhard and Günther on Saxony, of Pfeiffer on Thüringen, of Burkart on Würtemberg,[2] of Decaisne on Lyons, Versailles, and Paris,[3] and he will then, it is to be hoped, avoid for the future any such expressions of opinion, and even if not, it is of no further importance. In all unprejudiced and logically thinking men, of whom there are many amongst American physicians, the conviction has taken deep root, that in cholera human intercourse merely disseminates a few sparks, which are capable of inducing greater effects where there is an accumulation of explosive material, but which may long smoulder when such accumulation is absent, and that this explosive material must be sought for, not only in man, but also in the locality, and especially in the conditions of the soil, which are influenced alike by the climate and by man. The essential point in the treatment of epidemics must also be sought for in the direction of local conditions. The severity of epidemics never depends on the dissemination of cholera germs, which is sufficiently general and equable, but on *local* and individual relations, on which a certain degree of influence can be exerted by man; human intercourse is so complicated, many-sided, and varying a condition, that we shall never be able to exert the control over it that would be requisite to prevent its communicating the cholera spark. A single spark suffices to set a magazine on fire, and no more violent explosion ensues from the contact of a thousand sparks than from one. If 999 sparks are thus given off and severally extinguished, whilst only one alights in a state of ignition, the mishap is equally great, and cannot be prevented. I must refer, in regard to this point, to the remarks I have made on the cholera in Syria and on the prophylaxis of cholera in Europe, which are contained in the twelfth volume of the *Zeitschrift für Biologie*, and in the number of this Journal for May, 1876.

---

[1] In this great town there were only 259 cases of death from February to November, 1873, of cholera.

[2] Zeitschrift für Biologie, vol. xii. p. 366.

[3] Decaisne. La Théorie Tellurique de la Dissemination du Cholera et son Application aux Villes de Lyons, Versailles, et Paris en particulier. Annales d'Hygiènes, Juillet, 1875, p. 63.

SEVENTH PROPOSITION.

One attack of cholera imparts to the individual no immunity from the disease in the future, but the contrary seems to be established.

It is a matter of small interest to confute this proposition, and I think it unnecessary to consider it minutely.

The seven ætiological propositions of McClellan have thus been severally met. There is no mistaking the fact that these seven propositions rest on the basis of the nine propositions of Woodworth. Only one thesis, on which the two last propositions of Woodworth rest, appear to McClellan to rest on insufficient grounds, and he has here abandoned his colleague, who has himself in a note (p. 17) given up his view. It is that the cholera agent is of an alkaline nature, and that acids constitute an unfailing antidote to it. Woodworth is not the discoverer of this "capital fact," but neither is his great authority, Macnamara, in Calcutta; he therefore makes no claim to the honour of the discovery, but furnishes himself only with a convincing argument for the correctness of the discovery of Macnamara. During the cholera epidemic of 1866, Woodworth was the physician in charge of the lunatic department of the Philadelphia Hospital. The disease had nearly disappeared from the town, with the exception of the female ward of the insane asylum, where it raged with violence; it was remarkable that it was almost completely limited to three of the seven wards of the female wing. It was so obstinate that the officer of health officially visited the institution, but was unable to discover any reason for the duration of the disease in the wards in question. It is true that the female wing was overcrowded, since there were 350 patients; but the ward in which so many were attacked contained fewer people than others which remained unaffected. During the whole epidemic only two cases occurred on the male side, whilst on the female one was attacked in every nine; at the recommendation of his friend, Dr. James Wilson, Woodworth tried the effects of sulphuric acid with great success. As it was difficult to make some of the patients take medicine, for they dreaded that they should be poisoned, it suggested itself to him to give the sulphuric acid in sugar-water, allowing it to transpire through the nurses that all the cases were to be treated with lemonade. About twenty drops of diluted sulphuric acid were accordingly added to four ounces of sugar-water, and a little oil of lemons and some pieces of lemon-peel added; and now see the wonderfully successful result as given in Woodworth's daybook! Up to the 20th of August there had already been seventeen cases.

On August 20 there were four fresh cases.

On August 21 there were four fresh cases.

On August 22 there were four fresh cases.

On August 23 there were two fresh cases. The sanitary commission visited the Institution.

On August 24 there were five fresh cases.

On August 25 there was one fresh case. The acid was given for the first time in the afternoon.

On August 26 there were four fresh cases during the night, within twelve hours after the first prescription of acid.

On August 27 there was no fresh case.

On August 28 one fresh case of a woman who refused to take the acid, spitting it out, and declaring that it was no lemonade, but oil of vitriol.

On August 29 there was no fresh case.

On August 30 there was no fresh case.

On August 31 there was no fresh case. The acid was set aside (the supplies of sugar being exhausted).

On September 1 there was no fresh case.

On September 2 there were two fresh cases, two days after the discontinuation of the acid.

On September 3 there was no fresh case. The acid was again given, and continued for some time, and no other cases occurred.

Everything that Woodworth adds to this case can be passed over freely, even his explanation of the reason, that sulphuric acid cures cholera. He falls foul of the cholera conference because it declared that we possess no active agent for the cure of cholera, though he doubts not we have a sure prophylactic means in the mineral acids. Clinicists and practical physicians throughout the world will certainly ask whether Woodworth in making such statements is in earnest or in jest, though it certainly appears that he is in earnest.

Woodworth can never have seen a house epidemic in any institution, otherwise he must have known that this runs its course in about this time, or even still quicker, when nothing at all is done. He gave, it appears, on a single occasion, at the natural close of a house epidemic, diluted sulphuric acid, and without further evidence attributes the cessation of the attacks to this means. For such reasoning on the part of a physician, no parliamentary language is sufficiently strong, and yet upon the same basis rest the whole of Woodworth's nine propositions.

After the consideration of the nine bases of the American ætiology of cholera, I may be permitted to say a few words upon the measures based upon them, and I may remark that, what is there recommended is either incorrect, or has already been long known. In regard to prophylactic measures, not a single fact is to be learnt from the whole of this thick volume, and I pass, with only one or two observations, to the several reports, which, in accordance with the promise, are actually almost all printed as they have arrived, untouched; even with the most wonderful receipts, which were written to the several patients from the reporting offices. McClellan had no time to work up the reports. I condole especially with all American physicians who have not reported in accordance with the nine propositions, for these have worked almost entirely in vain. No estimate is given of the relative value of the facts, and yet we have here many very excellent and instructive reports, for instance, those from New Orleans and Cincinnati. The report on the whole is very defective, owing to the circumstance, that it is seldom stated how many cases, and indeed not once how many deaths occurred in the several states and districts, how many took place in the whole of America, and which places were attacked, and which not. We do not meet, moreover, with any attempt to give the statistics of cholera for 1873 in the United States.

The third division of the work, (B)—The History of the Dissemination of Asiatic Cholera in Asia and Europe, by Dr. John Peters, and in North America by McClellan—is a comprehensive work, but everywhere penetrated with the theoretical views of the author and reporter, which sensibly impairs its historical character. Statements obtained from the most various sources are employed without criticism. Amongst divergent and contrary reports, those are accepted as bases which serve to support the contagionistic view, the drinking water theory, &c., and the others are simply ignored; for example, on page 86, the excellent drinking water of Lyons is indicated as occasioning the immunity of that town, and yet everyone who has paid a little more attention to the case is well aware that the water supply of Lyons, up to the year 1858, was so bad that it could not be worse. Peters appears to be wholly ignorant of the numerous researches of Petréquin upon this point; the same holds good of Würtzburg and Dresden, which also very recently have been supplied with better water, though the water of Würtzburg even now leaves much to be desired, since one litre affords a dry residue of 700 millegrammes, which far exceeds the limits of badness. Had the author limited himself to the historical facts that are known in regard to the dissemination of cholera, and brought these into clear relief, he would have produced a serviceable work; but he has so diluted it with long theoretical discussions on historical data, that it is very troublesome to discover and isolate the latter.

The best part of the American reports is undoubtedly the fourth division (C), containing the bibliography by John Billings, M.D. A bookseller and a librarian together could scarcely have made the index to the literature of cholera more complete. That many are omitted is not surprising, for it is scarcely possible, and indeed scarcely necessary, to give all that has been written on this subject.

And now let us return for a moment to the Indian report. When Cuningham maintains so positively in his propositions that nothing is be gained by disinfection and isolation, and in his ninth proposition desires to lay down that the fundamental rule of practice is to adopt all hygienic improvements, we may well ask what is his final conviction? He has himself proposed the question, and answered it with great precision in his ninth yearly report.[1] If we are compelled to believe that cholera is disseminated not by contagion, but in some other obscure and still unknown manner, we are indeed helpless, and can do nothing, all progress being arrested. Cuningham points very correctly to the standpoint which many physicians and officials take up in regard to the cholera question, and states the ground on which the contagionistic views are so firmly held. Men believe that from this standpoint only they can do something, whilst on the localistic theory they are helpless, for by general hygienic reforms no specific means appear against a specific disease like cholera. He says in so many words:—

---

[1] Ninth Annual Report of the Sanitary Commissioner with the Government of India, 1872. Calcutta, 1873, p. 33.

"Where is the evidence that sanitary improvements have really prevented cholera? Is there any fact in the whole history of the past epidemic to prove that clean places escaped and that dirty places suffered? On the contrary, is it not true that our European troops, who are housed in stately piles, on whom every care is bestowed, suffer far more than the inmates of native hovels, who live too often in circumstances of filth and overcrowding and every other sanitary defect? In considering that question there are several matters which must not be left out of sight. In the first place the influence of race and habit cannot be ignored. The native child is reared in circumstances under which the European child would almost inevitably perish. The native exposes himself bareheaded to a fierce sun which the European with his head well covered finds it difficult to withstand; and will walk many miles a day on a diet which would be regarded by the white man as most wretched fare, with which his frame, under such hard exercise, would never be satisfied. And if in these matters there is such a marked difference between the two races, it is not surprising that there should also be a marked difference between them in regard to matters of health, and that however much his susceptibility may be aggravated by his own act, it still remains a fact that the European is specially prone to severe tropical diseases; that he needs more care than the native to preserve health; that he could hardly, indeed, exist under such conditions as those in which they often live and prosper.

"And again it must be remembered that the *distribution* of cholera, as may be proved beyond all doubt, is not regulated by conditions of filth or cleanliness. Large tracts of country often escape in which the people are no cleaner than those in others; and even within the epidemic area villages escape, while others, to all appearance very much the same, suffer severely. But we know by experience that much may be done by sanitary improvements to affect the incidence of cholera in particular localities and to diminish its violence. Of this there could be no more striking example than the history of jails in Upper India. In 1860, to go no farther back, 223 prisoners died of cholera in the North-

Western Provinces, out of an average strength of 14,468. In 1861, out of 15,662 there were 524 deaths from this cause. In 1863, out of much the same strength (15,526), there were 1563. In the epidemic of 1867, out of 15,107, there were only 31 deaths; in that of 1869, out of 18,587, 88 deaths; and in that of 1872, out of 16,788, only 43. A very striking example to the same effect is given by the Sanitary Commissioner of Madras regarding the jails in that presidency.[1] Compare the annual mortality from cholera in the years from 1861–1866 with that in the years from 1867–1871.

Ratio of annual mortality in the jails of Madras Presidency per 1,000 *of average strength.*

Years.	Cholera.	Years.	Cholera.
1861-62	26·3	1867	0·8
1862-63	23·0	1868	0·2
1863-64	15·6	1869	4·3
1864-65	21·3	1870	1·5
1865	30·0	1871	0·7
1866	25·5		

The occurrence of such marked diminution in the deaths from cholera—and it is to be seen also in regard to other diseases—in conjunction with great sanitary improvements, is no mere coincidence. Whatever opinions may be held on theoretical questions, *the* great work to be done is to perfect and extend such improvements, not only in jails and cantonments, but among the people generally."

A better and more expressive conclusion can scarcely be found than that which I have given in discussing the Indian Cholera Reports and the American Report, for the benefit of ourselves in Europe, and indeed of the whole world. The most essential point of the whole matter is compressed into the ninth proposition of Cuningham.

In the present condition of the cholera question, the interests of scientific inquiry and those of practical measures against the dissemination of the disease coincide in the endeavour to obtain an exact analysis of the locality by strict evidence of facts, which is the foundation of all science and all practice. The next object is to ascertain by more detailed observations what part or what parts of the locality chiefly develop and help to increase the cholera infection, the existence of which we may and must believe in from its actions, and to what parts of human intercourse it especially adheres, if its dissemination depends on this; when more definite discoveries have been made in this direction it may become possible to discover the infectious material itself, and to study its behaviour more closely. In this division of labour, just as in the development of anatomy, the establishment of the coarser or macroscopic facts must precede that of the finer or microscopic points. We cannot wonder that the minutest points have hitherto escaped us, since we have not worked out at present the coarsest. As long as we can still argue as to whether the infection proceeds from the cholera patient or from the cholera locality, we have not made the first steps in its scientific investigation. Much would be gained if the greater number of observers were to set themselves free from the contagionistic view by which they are hampered, and which, up to the present time, has so long held them in a false and consequently unfruitful position.

---

[1] Annual Report of the Sanitary Commissioner for Madras for 1871, p. 106.

I shall take another opportunity of stating my ideas regarding the manner in which the work ought to be carried on in the future, and how it may be greatly forwarded.

THE PRACTITIONER.

APRIL, 1877.

Original Communications.

ON THE USE OF WEAK SOLUTIONS OF SALINE DRUGS.

BY W. F. WADE, F.R.C.P.

Physician to the General Hospital, Birmingham.

EVERY practitioner with much experience amongst the upper classes of society must have been struck by excellent results produced in many cases by a course of mineral water taken at its source. Not only are symptoms of long-standing relieved, but the relief, if not permanent, is frequently of long duration.

It may readily be granted that alteration of habits, change of, and restriction in, diet, charming scenery, difference of climate, or of altitude, out-door life, exercise, early rising and retiring, with freedom from business or other cares, may actively co-operate in producing the happy result.

But, especially in the case of some springs, we cannot ignore the fact that the patient is also taking saline drugs in very sensible quantities; combined with these there is very generally a minute, often most minute, proportion, of other salts and substances. To what extent these are active agents we have no data or facts to determine. But without venturing to offer any opinion on this point, I assume for my present purpose that the favourable changes effected by these mineral waters is due rather to those drugs which are present in sensible, than to those which occur only in insensible quantities. These salts in no way differ from other samples made in the laboratory of the chemist. But the fashion in which they are mixed by nature is very different from that in which we are accustomed to order them to be mixed and taken.

For example, if we give a patient two scruples of carbonate of soda, we probably put it into an ounce of water, whereas nature at Vichy puts it into about sixteen ounces. If we give two scruples each of sulphate of soda and sulphate of magnesia, we put them into an ounce or an ounce and a half of water ; nature at Friedrichshall puts them into sixteen ounces. Here then is a very material difference between the artificial and the natural prescriptions. In my opinion better results are obtained by the use of the natural prescriptions. Carlsbad salts from the Sprudel spring are now frequently employed in this country ; they consist merely of sulphate of soda, carbonate of soda, and chloride of sodium, all drugs of extreme cheapness, a characteristic of all the main ingredients of mineral waters. A small bottle of Sprudel salts costs 3*s.* 6*d.* The materials are intrinsically worth about one penny.

Why then should not a poor club-patient have the benefit of a course of Carlsbad, Vichy, or Friedrichshall waters, rudely it may be, but, as it seems to me, very efficiently prepared ? The disorders attendant upon insufficient action of the liver and kidneys, which are those most notably alleviated by such waters, are by no means limited to the rich. And actually for a few pence a three or four weeks' course of such waters may be obtained. It should be remembered that a want of success cannot be fairly imputed to such a plan unless the treatment has been pursued for as long a period as experience at the springs shows to be necessary. An ounce of a mixture containing the proper amount of salts is to be added to ten or fifteen ounces of water, and drunk either at once or in divided doses before breakfast every morning, or, if the patient be willing, it may be still further diluted.

This principle is capable of further development, and in a way which furnishes even more important advantages, in which the rich as well as the poor may participate.

The "alkaline-acidulous," the "muriated-alkaline-acidulous," and the "alkaline" springs comprise amongst others the important waters of Vichy, Fachingen, Ems, Carlsbad, and Marienbad. In these waters there is found a varying but considerable quantity of carbonate of soda, but either no, or very inconsiderable quantities of, potassium or lithium. Now we most of us, and not without reason, believe that the salts of these metals are more potential in the classes of disorders for which these waters are used than the salts of sodium.

The "muriated water" of Baden-Baden contains a fair quantity of lithium, but so little that it is there customary to add lithia salts for the treatment of those persons whose stomachs will not stand an efficient dose of the native water.

Again, the "Bitter waters" are active purgatives from the quantity of sulphate of soda they contain, as well as, in some instances, sulphate of magnesia, but they contain a very small proportion of sulphate of potash. Thus Püllna water has 123 grains of sulphate of soda and 93 grains of sulphate of magnesia to a little less than 5 grains of sulphate of potash.

Now sulphate of potash is, as regards the other two salts, much superior as a cholagogue, though inferior as a purgative. Nevertheless, many patients whose livers are sluggish are not in need of any eccoprotic, in fact, in some cases, the bowels are relaxed. It is true that in some persons the action of a saline purgative seems to extend to the liver and to promote its action. But this is by no means invariably the case, even as regards plethoric people. While writing this, two gouty patients have consulted me, one of whom had been in the habit of taking Friedrichshall, and the other Hunyadi Janos water for torpor of the liver, and they both spontaneously mentioned that these waters respectively acted freely on the bowels, and yet did not relieve the liver. Most of the waters alluded to act to some extent as diuretics, and in many of the cases which they benefit it would appear that a diuretic action is that which we should expect to be of use. It is quite true that in other cases where great benefit is obtained there is no diuresis, and, according to some observations, no increase of urinary solids is produced. It is quite conceivable that irregularities of blood-distribution may be insensibly removed. Yet none of them contain iodide of potassium, which in small doses, *i.e.* one and a half or two grains, is a powerful adjuvant to diuretic salts.

It seems to me then that we can make, if rude, yet very effective imitations of some of the most potent mineral waters, and, secondly, that we can compose even better mineral waters than those which nature has provided.

If, for example, we wish to act only on the liver we can use sulphate of potash by itself, whereas if it is necessary or appears desirable to conjoin purgation we may add a suitable quantity of sulphate of soda or magnesia as we think best.

If we wish to act only on the kidneys we can use carbonate of potash with citrate of lithia, combined with small doses of iodide of potassium or any other potash salt which we may prefer, and, indeed, if we desire to do so, the soda-salts likewise, and we add, if required, a purgative salt.

If, as is perhaps most often the case, we think proper to act upon both liver and kidneys, we can combine any of the above-mentioned drugs. Nor is it difficult to utilise salts of iron and manganese, though I have not yet done so. The addition of chloride of sodium, a prominent constituent of so many natural waters, makes the mixture to most persons less unpalatable.

I generally order the dose to be taken in warm water, as this mixture is, in the absence of carbonic acid, better tolerated by most stomachs, but cold water may be more agreeable to some, and, indeed, there is no reason why an aërated water, as, for example, Apollinaris, should not be employed as a vehicle. Most people are nowadays accustomed to bitter and other mineral waters, and to them the bulk of the dose is not startling. It is, even by persons not previously so accustomed, and more especially by men of business, found very agreeable to have done with medicine for the day when once the morning dosage has been disposed of. I have found the plan here recommended very useful in a number of cases. In one a large and unsuspected renal calculus was passed by a woman at the end of three weeks. I must again repeat that a course of this kind should be continued for three to four weeks, or, in some instances, even longer, to have a fair chance of success.

ON DIPHTHERITIC PARALYSIS.

BY THOMAS STRETCH DOWSE, M.D., F.R.C.P.E.,
Physician Superintendent Central London Sick Asylum, Highgate.

(*Continued from page* 182.)

Dr. Barr and Dr. Hector Cameron also give instances of this form of paralysis in the *British Medical Journal* for August 21, 1875.

3rd, 4th, 6th of the ocular muscles; I have usually found the 6th to be more involved than the others, and the patients to have an internal squint. Ptosis is by no means common, yet there is a heaviness of the eye-lids, showing that the 3rd nerve is not quite free.

5th, This nerve is usually involved, both in reference to its motor and sensory supply—the jaw in some cases is depressed with the greatest difficulty, and there is also almost complete absence of sensation of the face.

7th, Both the portio dura and mollis are in like manner affected, and owing to the paralysis of the facial muscles, conjoined with those of the neck, the chin falls forward upon the chest. The patients present a very remarkable appearance. The paralysis of the muscles of the neck is sometimes so great that the head can be impelled from one side to the other in the most ludicrous manner. There is want of voluntary power to blow, whistle, or eject saliva.

8th, The greatest point of interest and importance is attached to the glosso-pharyngeal, pneumogastric, and spinal accessory nerves. 1st with regard to the glosso-pharyngeal. We not infrequently find both dysphagia and dysphonia, as well as complete loss of sensation of the velum, pillars of the fauces and the pharynx, and although the patient cannot often speak above a whisper, I have never found the vocal cords to be paralysed. It is often almost impossible for the patients to swallow fluids, as they return through the nostrils, and on account of the immobility of the tongue and facial muscles, the food has to be pushed from between the teeth down the throat over the epiglottis, before it can be grasped by the œsophagus. The patient has a horror of and dreads to take food, whereas in bulbar paralysis there is a voraciousness amounting almost to a monomania, and persons will feed themselves even at the risk of being choked. It is remarkable sometimes to observe how the paralysis may spread from one side of the throat to the other. Paralysis of motion will sometimes pass away, leaving paralysis of sensation, and *vice versâ.*

When the pneumogastric nerve is involved we have a series of troubles referable to the circulation and respiration. These have been described by MM. Billard, Duchenne, Bailly, and others. M. Billard has noticed that when sensibility returns in the limbs, cardiac troubles often become manifest with an intermittent action almost sufficient to completely arrest the circulation. There is precordial agony, smallness, slowness, and irregularity of the pulse, which sometimes becomes thread-like, and almost undistinguishable.

We know that death during diphtheria is due not to asphyxia, but to syncope or cardiac asthenia, and M. Sanné maintains, contrary to my own judgment and that of many English observers, that where death results from this cause it is not due to the formation of cardiac thrombosis, but from direct paralysis of its walls. He says that sudden death during the convalescent period is often due to this cause. The patient falls down suddenly in a state of syncope during some slight exertion, and dies in a few minutes. In other cases he is taken suddenly with precordial pain and urgent dyspnœa, the pulse becomes small, weak, and irregular, and death ensues, it might be in a few minutes, or a few hours, at the end of the syncopal attack, or by the paralysing power over the heart. In these cases it has been generally found that the attacks have been preceded by a weak and irregular pulse as well as by an intermittent action of the heart for several days before. By these signs it is to be inferred that a cardiac paralysis can exist as well as a paralysis of the eyes, pharynx, and intestines. MM. Pereté and Bissel state that they have found the heart alone to be paralysed.

9th. The movements of the tongue are not performed coordinately, so that articulation is not complete, and the letter R is the most difficult to pronounce. The very diagnostic nasal twang during the process of articulation must not be forgotten.

With regard to the pulmonary troubles some observers believe that they are due to pulmonary paralysis or asthenia, whilst others attribute them to embolism and thrombosis. M. Bouchut and Labadie Lagrave have proved that capillary emboli and interlobular thrombi are the chief causes in the production of pulmonary apoplexy in these cases; but some pathologists maintain that the passive congestion of the lungs, accumulation of mucus and cyanosis are due to advancing paralysis of the muscles of the trunk and diaphragm. Dr. Pearson Irvine, in the last volume of the Clinical Society's Transactions, records a very interesting case of diphtheritic paralysis, simulating extensive disease of the lung. The patient was a little girl at six years. The mother complained, on the child's part, of symptoms of bronchitis which had lasted a fortnight, and stated that the child was subject to attacks, though all previous ones had differed from the present; she had been suffering previously from slight sore throat. When first seen she had a queer look about the eyes which was not considered strabismus. She did not carry herself erect, that is to say the head drooped. The pulse was 65, temp. 98·4, resp. 14. A few days after this it was noticed that there was deficient power in the lower limbs, no dragging, but a peculiar clumsiness, not unlike that of a person in the earlier stages of locomotor-ataxy. There were twitchings in the limbs, and the speech was thick and uncertain. The throat was filled up by a relaxed palate, and the finger could be passed over the epiglottis and palate and round the pharynx without exciting either movement or annoyance. There was no loss of sensation in the limbs, and no tenderness on pressure. The voice was nasal. Dr. Irvine goes on to describe in detail this very interesting case, which was clearly due to the diphtheritic poison, and he concludes with the following statement:—" This case may possibly seem to be of interest as showing how insidious diphtheritic paralysis really is, and how widely spread it may be and not be suspected. It shows also of what value minute histories are in obscure diseases." Maingault relates one case in which constant cough, with bronchial râles, was a prominent symptom, but there were previous well marked signs of diphtheritic paralysis, and a known attack of diphtheria.

Possibly in these cases the diphtheritic poison may cause a sudden pulmonary paralysis, so that death occurs in a few hours.

Relative to the paralysis of the extremities, the following typical case, which came under my care some few months since, will explain its nature very fully:—

A. B., age 17, a fair young fellow of average build, was admitted into the Central London Sick Asylum on the 8th of May, 1876. He stated that he had been suffering during the previous month of March from a severe sore-throat, soon followed by loss of voice and great difficulty in swallowing. Taste, smell, and hearing were each impaired. At the end of April he walked from Crewe to London in ten days, so that at this time he could not have had much paralysis of the lower limbs. When he came under my care he could walk fairly well, but in a few days he was quite unable either to walk or stand alone. He lost his equilibrium when he endeavoured to assume the erect posture; he separated his legs and extended his arms in order to balance himself. All the signs of bulbar paralysis soon became manifest. The legs became powerless for some day or two before the arms, and his chief complaint was that they felt so cold. In a short time he became helpless, and was confined to his bed. There was only slight power of movement in any of the limbs, and sensation was equally defective. The muscular grasping power as evidenced by the dynamometer was scarcely equal to 10 kilogrammes. It is quite impossible for him to pick up a pin, from sensori-motor deficiency, or raise a jug from the table; but there are no tremors until voluntary muscular power is willed, as in writing, when the movements are quite inco-ordinate. When lying upon the back the movements of the lower limbs are co-ordinate, but there is great deficiency of muscular power. He can only just raise 14 lbs.

with the right leg, and 8 lbs. with the left. Cutaneous sensibility is much blunted. He appreciates the two points of the œsthesiometer at $\frac{3}{8}$ths of an inch. There is sensori-motor response to 26 cells, Stöhrer's continuous current. Temperature decreases in direct ratio with sensation from the knee downwards to the feet. This was his condition on July 18th, when I commenced the use of the galvanic current and injections of strychnine. It must be remembered that he was unable stand or walk, and when the injection was used he could not feel the nozzle of the syringe entering the flesh. The $\frac{1}{24}$th gr. of strychnine was used on the first day. The $\frac{1}{18}$th on the second day. The $\frac{1}{15}$th on the third day, and the $\frac{1}{12}$th on the fourth, when he got up and could stand fairly well. The galvanism and injections were continued for another week, when he walked home to the Strand, free from paralysis either of motion or sensation.

From this case and my previous remarks we gather that from the *blood changes* consequent upon the devitalizing agency of diphtheritic poison, a paralysis can and does often follow upon the cure of the local malady; that from our insufficient knowledge of the subject, we have no precise data to enable us to state when paralysis will follow any of the varieties of the local diphtheritic manifestations; neither can we state in what especial habit of body it is the more prone to be engendered.

That this form of paralysis is different from any other kind with which we have to deal. That in many respects it resembles an hysterical or reflex paresis. That it may be confined to the nerves of the medulla, or to one single nerve, as the glosso-pharyngeal. That it is usually symmetrical, although often migratory, and not infrequently relapses. That defects of motility and sensation usually march hand in hand. But that whatever especial objective feature of paralysis is represented, we can if we go carefully into the case discover a general want of tonicity throughout the whole of the nervous centres. That paralysis of the heart is a most common sequence, and that a recurrence of the throat symptoms may sometimes precede improvement of the paralysis. That it cures itself, or rather that its cure can be and is frequently accomplished spontaneously without the help of any especial drug. That the trophic nerves are rarely brought under the influence of the diphtheritic agency, as in many other forms of toxic paresis (in cerebro-spinal-meningitis, for instance). We rarely find gangrene or bed-sores resulting—I mean rapidly and extensively in the course of twenty-four hours or less.

There are some cases reported of gangrene of the lower limbs, but these were associated with plugging of the arterial trunks from embola. There is not as a rule muscular wasting; muscular electro-irritability is often impaired, but this is variable. I will now call especial attention to the treatment of this paralysis. As just stated, it will run its course and disappear almost suddenly, but there can be little doubt of this, that its duration can be cut short by remedial agents, of which we have four that are special:—

1st. Nutrition.
2nd. Rest.
3rd. Hypodermic injections of strychnia.
4th. The continuous galvanic current.

With regard to the administration of nourishment, I adopt the same course that I do in the true form of bulbar-paralysis, and that is to feed the patients at regular intervals by means of a piece of india-rubber tubing passed through the nostrils into the œsophagus.

This procedure is of the greatest importance for the reason of the constitutional disturbance produced by the difficulty in endeavouring to swallow. The sense of choking and the feeling of almost impending dissolution is thereby obviated, not forgetting the fact also that we are keeping the paralysed parts from any unnecessary fatigue.

I need scarcely say how much nourishment is needed in these cases, and it is astonishing to see how readily nature will appropriate to herself this material for rebuilding her shattered structure. I usually pour into the stomach a pint of fluid at one time, about every three hours, consisting of milk, beef-tea, eggs, and 1 oz. of brandy. The use of the latter under these circumstances is absolutely necessary, not that I believe that of itself it acts as a food, but that it stimulates the vaso-motor nerves of the peptic glands and increases the flow of gastric fluid as well as stimulates the veins to absorption. It is a fact that we have a paresis of the coats of the stomach in these paralyses as well as of the bowels, which cannot be better evidenced than by the subjective phenomena of cramps and strange feelings, as well as by the objective sign of habitual constipation. Strychnine certainly seems to have some specific action in restoring nerve-power to the paralysed muscles, and its internal administration is valueless compared to the effect which is produced by hypodermic injection. I usually begin with $\frac{1}{24}$th of a gr. and gradually increase it up to the $\frac{1}{6}$th of a gr.

As this is an important point, I give you the clinical experience of Dr. Henoch, clinical professor in the Charité Hospital at Berlin. He says:—" It is known that recovery from diphtheritic paralysis frequently takes place spontaneously if we have the patience to wait for it, and further, that electricity is often used with advantage. The following cases are well calculated to prove that we may bring about a more rapid recovery if we do not leave it to nature, but treat the malady with injections of strychnia. Both cases were observed by me in the Polyclinic of the Charité.

" Hedwig, R., a girl eleven years old, came under notice on April 7, 1874, having suffered from diphtheria six weeks previously. For three weeks there had been paralysis of the palate, the uvula and velum were perfectly motionless both in phonation and in inspiration ; the voice was nasal, drink flowed from the nose, there was paralysis of accommodation of the eyes (she could not read, and had double vision at a distance), there was paralysis of the muscles of the back of the neck, so that the head was bent forward, and could not be lifted backward. Besides these symptoms there was also the remarkable phenomenon which I cannot explain, namely, that when the girl was directed to close her eyes both eyelids were seized with a twitching vibratory movement, which ceased as soon as the eyes were opened. In other respects nothing abnormal was to be observed. The patient had already taken quinine and iron without benefit. On April 7th I gave the first injection of two milligrammes (about $\frac{1}{30}$th gr.) strychnia, and ordered the quinine and iron to be continued. On the 9th a second injection was made, and on the 11th she could hold up her head considerably better—a third injection was made. On the 13th speech was essentially improved. The movements of the velum were more distinctly visible, but reading was still impossible—a fourth injection was given. From the 17th she could read, and on May 1st she was discharged, completely cured. In all, $\frac{1}{5}$th of a grain of strychnia was used. It is to be remarked that the vibratory twitchings of the eyelids still continued after every other symptom had been removed, so that I am disposed to regard it as something purely accidental.

"CASE II. was that of a boy, aged 10, who was admitted December 4, 1874. At the beginning of October he had an attack of diphtheria, by which he was confined to bed for a fortnight. He then returned to school, and immediately afterwards paralysis set in. Here also there was paralysis of the velum, discharge of fluids through the nose, nasal, unintelligible speech, together with paralysis of the muscles of the nape, impossibility to read, and paresis of the lower limbs. The boy tottered in walking, especially in turning round, and showed distinct ataxic symptoms. On the 4th I injected $\frac{1}{45}$th of a grain of strychnia; and subsequently gave three other injections of $\frac{1}{30}$th of a grain. On the 14th walking and speech were already considerably improved. Under a continuance of the injections the symptoms rapidly diminished, and after ten injections (about $\frac{1}{3}$rd of a grain of strychnia in all being used) recovery was complete.

"In both children the injections were made in the nape of the neck. On no occasion was there any untoward symptoms. If it be objected that the cure was not produced by the strychnia, but rather was spontaneous, I would remark that no one who observed the rapidity with which the recovery took place could doubt the therapeutic action of the injections. I had at first some hesitation in trying the injections on children, but the experience of Demme, the director of the Children's Hospital at Berne, who praises strychnia as a remedy in infantile paralysis, put me at ease.

"Since then I have used strychnine injections in children in a rather large number of cases, not only for paralysis, but for prolapsus ani; and my experience agrees with that of Demme, that, if proper care be taken, there is no fear of mischievous results at this age. But that not only a non-injurious, but a distinctly good action may follow, is proved by my cases, supported as they are by the observations of Dr. Acker, of Erlangen (see the *Deutsche Archiv für klinische Medicin*, of 1874), which, however, were indeed not made on children, but on grown persons."

In reference to the use of galvanism I find the continuous and induced currents of about equal value. It is of far greater use, I think, when applied to the spine and the periphery at the same time. My mode of procedure is to place the feet of my patient in a galvanized zinc bath partly filled with warm (salt) water, then to çarry the sponge reophore from the positive pole of the battery to the spine, and that from the negative pole to the water. I use Stöhrer's 40-celled continuous battery.

Lastly, we have to consider the pathology of this disease, which even at the present time might be looked upon as a vexed question, and there are necessarily many theories concerning it.

PATHOLOGY.—We find little in the home literature of this country concerning the pathology and the anatomico-histological changes found after death from diphtheritic paralysis.

Sir William Gull, in the year, 1871 at a meeting of the Clinical Society, over which he presided, made the statement that he had seen affections of the cord follow non-diphtheritic affections of the throat, and from examinations of fresh cords, which he had made under such circumstances, the microscope revealed a dull white porcelain texture, with very little grey substance visible, loosened nerve-tissue, and no exudative or other change.

Dr. C. Morelli, in his essay on Diphtheritic Paralysis, as observed in Florence from 1861 to 1864, gives some important dissections in the cases of diphtheria, in which analogous lesions were found in the spinal cord and nerves, and which he summarises by saying :—" That the changes found after death are inadequate to explain the various forms of diphtheritic paralysis, and leave it an open question whether the pathogenesis of this affection be not entirely due to the morbific cause of the diphtheria, and whether the paralysis does not proceed from the periphery to the nervous centres."

Other Italian and German physicians also have described necropsies, in which they found a disseminated myelitis in the medulla and spinal cord.

But no pathologists of the past few years have given greater attention to the morbid changes of the spinal cord than M. Charcot and M. Vulpian, and their opinion seems to be that the paralysis of diphtheria is due to peripheric rather than to central change in the nervous centres; that it is in fact an extending neuritis or inflammatory process propagated from the muscular surfaces and nerve extremities, which produces abolition of their functions.

They have shown that the normal condition of the palatine nerves is altered. The nerve tubules are devoid of myeline, and granulations are seen to exist in the neurilemma.

These observers have not found any change in the normal structure of the medulla.

The peripheric theory is quite admissible in reference to the paralysis of the palatine muscles, and if we think carefully over the direct anatomical connection between the spheno-palatine, otic, and Gasserian ganglia, we can readily conceive what a wide field of normal nerve influence can be rendered fallow, if not by direct, by reflected inhibition. We find that the palatine nerves, through Meckel's ganglion, from which they originate, are brought into immediate connection with the sympathetic, the facial, and the trigeminal through the vidian and pterygo-palatine branches. We know that this connection would at once account for and explain the loss of hearing and paralysis of the face. Then with regard to the eighth pair of nerves (the glosso-pharyngeal, pneumogastric, and spinal accessory), we find that their ganglionic and other connections with spinal and sympathetic branches are legion, so that we have not, I think, any especial difficulty in accounting for the pareses of the neck, tongue, lungs, and heart, or in fact wherever filaments of these nerves are distributed, and there is not the least doubt in my mind that this power of inhibition may and does extend throughout the whole course of the spinal cord, producing molecular derangement, but not organic change.

We find paralysis not infrequently to result from other exhaustive forms of blood-disease, which are described by M. Gubler as asthenic paralysis, and made evident during convalescence. These have not been noted so carefully in this country as they deserve to be, because they usually come under the definition of weakness from so-and-so, and are more intimately related to the acute stage of the disease, whilst, on the other hand, there can be no doubt that in diphtheritic-paralysis we have an unique condition. And further, when we consider that in diphtheria we have a disease so rapidly fatal from molecular disintegration of the normal constituents of the blood, we can easily conceive that during the progress of nutrition and repair which follows there may be some derangement of the due balance that normally exists between nerve-centres and the nerves themselves, as well as between the latter and the muscles which they govern, giving rise to this especial form of paralysis.

QUININE AS AN ECBOLIC.

BY H. P. ROBERTS,

Surgeon 9th N.I., Baroda.

On the 17th December I was sent for by Mrs. E. A., aged twenty-four. She complained of having "fever" (ague), which had begun the previous day, and though her attack was mild, as it had made her feel weak, she was very anxious to prevent a recurrence of it. She was expecting her third confinement in ten days, and was most emphatic—when questioned—as to the correctness of her dates; in this case the nurse was not expected for ten days. The pulse was quick (110), and her face flushed. I ordered her two doses of quinine, three grains each, to be taken before the evening. At 10.30 P.M. I was again called, and found the labour pains had commenced. On entering the room she at once said to me, "The quinine you gave me has brought this on." On inquiry she informed me, in addition to her own sensations of being affected by the quinine, that the natives in India *all* attributed this action on the uterus to this drug.

She was delivered at 1·30 A.M.

I had taken no notice of her remark until I chanced to fall upon the suggestion of quinine being an ecbolic in a back number (July 1876) of the *Practitioner*. As is similarly remarked in Case I. given there, the labour may have been induced by the influence of the feverish attack, and my having prescribed quinine merely a coincidence—it seemed however worth noticing.

ON THE DESIRABILITY OF FORMALLY NAMING ANY EXISTING DIATHESIS IN CASES OF ACUTE DISEASE.

BY T. CHURTON, M.B.,

Physician to the Leeds Public Dispensary.

Influence of Diathesis Admitted.—I do not propose to dwell upon, to illustrate, or to attempt to prove the influence of diathesis upon the course of acute disease, since this influence is generally asserted or admitted. When acute diseases linger, and are drawn out beyond the term of what is called their natural history, their doing so is usually explained by the circumstance that the patient has something wrong besides—some diathesis or dyscrasia. Not only so, but specific names are now often appended to acute diseases expressive of the influence of such diatheses or dyscrasias upon them. Thus we hear not only of syphilitic, but also of gouty and rheumatic iritis; of gouty bronchitis; of drunkard's pneumonia, and, more doubtfully, of gouty and of rheumatic pneumonia. Dr. Sturges tells us that "Dr. Todd, besides the simple disease, used to speak of pneumonia complicating gout and rheumatism, as well as of strumous, typhoid, and traumatic pneumonia." Dr. Sturges himself, writing of pneumonia, says: "The acme of the disease is to be expected within eight days, but complete recovery may be delayed by the feeble recuperative power of the individual, and by many other things;" and he also relates a case of rheumatic fever in which the joint inflammations (under strongly alkaline treatment) disappeared suddenly and were succeeded immediately by double pneumonia. Dr. Milner Fothergill, in his recently published book on Therapeutics, says, "At times a general condition may obtain that interferes with the repair of any part which has been affected with acute disease. Such conditions are notably found in gout, rheumatism, and syphilis;" and the same author says specifically "Even pneumonia may have a gouty origin."

It would be impossible in half an hour, or indeed in a very much longer time, to discuss or even cursorily to touch upon all the interesting questions which naturally arise in connection with this subject. Confining myself to the clinical aspect of acute disease, I shall refrain from attempting accurate definitions, and from minute pathological inquiries or explanations; and for the purposes of this paper I shall mean by "acute disease" any disease accompanied by exudation, cell-proliferation, connective-tissue hyperplasia, or even merely by hyperæmia, whose existence is, in an otherwise healthy body, of comparatively short duration. And by diathesis (which means simply "state," whether good or bad), any abnormal state, physical, chemical, or vital, of the blood or of bioplasm, whether the latter be in its state of freedom in the blood or be deposited as tissue.

Diatheses liable to be overlooked.—The influence of diathesis, then, is admitted, but inasmuch as it is not always in operation—since a gouty man may have a non-gouty acute disease, and a syphilitic man an acute disease unaffected by his syphilitic taint—and inasmuch as, also, even when it is in full force and operation, it has not yet obtained a distinct, habitual, and decided recognition in nomenclature, it is, there is reason to think, liable at times to be *overlooked.* It is true that men of penetration and experience do not often overlook it, but it is probable that if a second name were always and necessarily, and not merely occasionally and at individual discretion, added to the name of the acute disease, indicating the presence or the absence, as the case may be, of any pre-existing abnormal state of blood-plasma or tissue-plasma, then a diathesis in a state of activity would much less frequently be overlooked by any one, even when he is hurried or fatigued. If, I mean, it were never sufficient to say that a patient has pneumonia merely, any more than it is considered sufficient to say that he has iritis merely: if it were necessary that an adjective should always be added indicating the kind of person (diathetically) who has the pneumonia—this latter consideration being often the most important element in determining the treatment. Many cases have impressed me with the conviction that such an adjectival addition should be expressly and constantly used.

Cases.—Pneumonia lithica.—A lady, aged sixty-two, of decidedly lithic diathesis, had pneumonia. One knee was somewhat swollen at the time of the attack. I saw the patient casually twice. The tongue was furred; pulse full, quick, and strong; skin hot; no cardiac distress; no great dyspnœa. Brandy, wine, eggs, milk, and beef-tea were being forced upon her, even against her will. The pneumonia was at first of no great extent. This treatment was continued, not without some remonstrance, and the patient died about the tenth day. That the treatment was injurious under the circumstances may be inferred from considering another case which occurred under my own more immediate observation, but which, from a difference in the *locale* of the acute disease, did not end fatally.

Arthritis lithica.—A tradesman's wife, aged fifty-five, had—not, fortunately, gouty pulmonitis, but gouty arthritis. She was treated in the usual way, but got rapidly worse, so that at last she positively seemed to be likely to die. Searching inquiry now disclosed the fact that her daughters, under the impression that it was necessary before all things to keep up her strength, had given her the strongest beef-tea—the extract, in short, of about two pounds of beef in the twenty-four hours, together with wine, milk, and other things; and this they had done in spite of the usual directions. The pulse was very feeble, and the strength seemed nearly gone, but a brisk purge of magnesia and colchicum, and a fruit diet with claret and water, soon restored the patient; and the value of the treatment being thus shown, it was acquiesced in, and she recovered completely; but if this patient had had pulmonitis lithica, instead of arthritis lithica, she would in all probability have died.

Pleuritis lithica.—A similar thing happened in the case of a child, aged four, the son of a country gentleman, who had pleuritic effusion. The more weak, thin, pallid, and listless he became, the more they pressed him with food, beef-tea, milk, eggs, &c. He passed much uric acid and lithates, still they had persevered. It was with considerable difficulty they could be prevailed upon to adopt a restricted diet, chiefly of fruit; whereupon he recovered. He has not eaten any meat except game since, and he is now almost the healthiest and ruddiest child I know. His blood had been filled with uric acid, and that had prevented the removal of the anatomical disorder. He had, in fact, pleuritis lithica.

Remarks.—These are examples of the ill effects in certain defined cases of the so-called restorative treatment of an acute disease, a treatment which may be all very well under some other conditions.

Pneumonia simplex.—Thus, the daughter of the lady whose case is first related, had had pneumonia a year before; but it was of a totally different species—Pneumonia simplex—and she had been quite correctly treated for severe and perilous cardiac distress about the eighth day, at a time when one lung was entirely solid, by small doses of milk and brandy, or water and brandy, every three minutes for a whole night. She recovered; and perhaps, from want of some differentiating name, her case lent support to the "restorative treatment of pneumonia"—a phrase which is still in use, though we are never tired of asserting that the patient, not the pneumonia, is to be treated.

The Syphilitic Diathesis.—Phthisis Syphilitica.—Lancereaux mentions a curious and well-known case in which the syphilitic diathesis was overlooked. An electuary was ordered for a phthisical patient, whose case was, however, considered hopeless. By mistake the patient got mercurial ointment, and took a piece as large as a nutmeg two or three times a day, and the end of it was that he was radically cured, greatly to the astonishment of everybody.

Hepatitis Syphilitica.—The following case, too, occurred to myself. A young married man, with a wife and two children, apparently in perfect health, had been under medical treatment for six weeks, his medicine having been frequently changed, but without effect. He was now greatly emaciated; he was sallow; his tongue was covered with creamy fur; all attempts to swallow food caused immediate vomiting; his speech was hesitating and tremulous. The epigastric and hypochondriac regions bulged considerably, and were occupied by an enlarged liver and, perhaps, enlarged spleen. For a few days I treated him for ague, beginning however with a dose of blue pill. The day after the pill he felt better, but I supposed the improvement to be due to the quinine, and was encouraged to continue the treatment for ague. He attributed his illness to cold, anxiety, and loss of rest at the time of his wife's confinement. At the end of a week, as he had not improved at all, inquiries were directed to syphilis, when he said he had once had a small sore, but "it had not come to much," and he had not had any noticeable secondary symptoms. Upon this, muriate of cinchonine and grey powder was given three times a day, and he began to amend. In a fortnight he was well enough to go into the country, and he omitted the medicine. A week later he returned, with the liver again enlarged, and the sickness, anorexia, and debility had reappeared. All idea of ague being now given up, I ordered five grains of blue pill every eight hours, and in ten or twelve days the man went to work. He took a blue pill once or twice a day for a month after. The pills did not purge him at all.

The Rheumatic Diathesis.—Looking upon rheumatism as a diathesis, and naming local joint-inflammations "arthritis," we shall be able to define as well as Arthritis rheumatica, A. lithica, A. simplex, A. strumosa, A. syphilitica, and others. Occasionally one species is mistaken for another. *Case of Arthritis Rheumatico-malariosa.*—I have seen a case of what may be called A. rheumatico-malariosa, in which the patient was made exceedingly ill by moderate doses of alkalies at the very outset of the treatment and very early in the disease, each dose causing quite alarming symptoms, but he was very quickly relieved by quinine and steel. This young man lived on the banks of the Thames, his house being actually tide-washed. And a few weeks ago I saw near Doncaster a patient with a similar but less severe form, in which the same thing happened in a less marked degree, alkalies being followed by great languor and debility, and by increasing severity on the part of the arthritis; but quinine being given on the fifth day, the patient quickly recovered, the whole case occupying less than a fortnight.

Synovitis Malariosa.—In another case, a young man had synovitis in one knee, which lasted some time, and seemed very likely to become chronic. It was proposed to apply Scott's dressing and a splint. It was ascertained, however, that the swelling had followed a local wetting, and that the man had no diathesis except perhaps the aguish. The joint was therefore merely wrapped in flannel, and arsenic and bark administered; in a few days the swelling was gone. *Remarks.*—The patient was pallid and languid, and lived in a district where ague is sometimes met with; but Scott's dressings and splints were the treatment for synovitis chronica, and were recommended rather urgently by a very able, but perhaps rather too surgical-minded, practitioner. I think, therefore, that the patient and his diatheses will never receive the consideration which is their due until they are promoted to the dignity of a title in every case.

The Gouty Diathesis.—The gouty or lithic diathesis, though as familiar as the syphilitic, has been already shown to be liable to neglect. *Gouty Bronchitis* (*B. lithica*).—Mr. Jessop, of Leeds, has recently mentioned to me a case, in which he was at length consulted, of gouty bronchitis which had been treated as simple bronchitis for a long time unavailingly, and which, upon being treated by anti-lithics, was speedily cured. *Case of Bronchitis Rheumatica.*—And he mentioned still more recently another case in which bronchitis seemed to be long-preserved by the *rheumatic* diathesis; for after prolonged and ineffectual treatment, arthritis occurred in one arm of the patient, and as this was plainly rheumatic, it was treated by potash; whereupon not only itself, but also the bronchitis, got well—no other change in the circumstances of the patient having been made.

Remarks.—At present we have only limited and imperfect means of judging of the existence of a diathesis, unless it connects itself with a positive anatomical disorder, recognised as being related to it; but as there is no doubt that the diathesis may be present without, or long prior to, any such apparent disorder, and as the influence of a diathesis is not confined to one set of tissues, though more potent for some than for others, it is necessary to cast about for some simple means of discovering the existence of diatheses when unconnected with their usual evidences.

Diathesis in Skin-diseases.—Cases of gouty bronchitis are not uncommon; skin diseases, too, are well known to be often manifestations of the gouty diathesis, and have often a second name accordingly. Dr. Tilbury Fox gives admirable directions for the treatment of the various diatheses in skin-diseases—his language is very distinct upon this point, nothing could be more so, and I suppose we all agree with him, yet the following case happened not long ago:—*Sometimes overlooked; Case.*—A man, aged 52, had carbuncle on the neck. For a month he had been under treatment by a practitioner in Finsbury. The swelling had grown larger, however, and he also showed signs, both gastric and arthritic, of gout; and no wonder, for he was of gouty habit, to begin with, and he had taken food, with port and champagne, freely, as supposed remedies for carbuncle. He was put upon anti-lithic treatment, both medicinal and dietetic, and the swelling being incised pretty freely, it and the gout disappeared together.

Another case; Compound diathesis.—In another case, a patient, gouty by descent, and showing unmistakable signs of that diathesis, had a local eczema. He had acquired syphilis years before, but had forgotten it. The eczema was treated for long, locally, and by anti-lithics, with but little success; anti-syphilitics being added, he was cured immediately. With our present limited means of what Dr. Moxon calls perignosis, there was some excuse for overlooking the second diathesis in this case.

Deviations from Health.—In writing of the treatment of eczema, Dr. Tilbury Fox gives, as already mentioned, directions for the treatment of various diatheses and cachexias, but he says also: " So varied are the deviations from health, that it is impossible to give more than an indication of the line of procedure in eczema, taken as a whole." But if we can treat these deviations we can name them, whatever may be their number in any individual case; and, on the other hand, if we cannot name them, if we do not recognise them or understand them well enough for that purpose, it is difficult to see how we can intelligently, not to say scientifically, treat them. Probably each and all of these innominate deviations from health will, like the old-fashioned extractives in physiological chemistry, some day find an explanation and a name.

Case.—A strongly-built man, aged 45, an occasional beer-drinker in rather, not very, large quantities, had pneumonia.

He continued to spit blood, and his temperature remained high, until steel was given with porter and good food. This result showed that he previously had a rather wide deviation from health, which had also caused his heart to beat slowly, his arterial muscles to act feebly, all his faculties to be languid, and his nerve-matter ill-nourished; probably his nutrient fluid lacked nearly every other element as well as iron: Pneumonia spanæmica.

Another Case.—A man, aged 28, scratched his forefinger with a thorn. It inflamed. Local and general treatment failed to cure the festering inflammation for six or seven weeks, as the patient was exposed to several, though slight, causes of disease. He then followed the hounds for one day and dined out, being absent from home one night. Three days afterwards the finger was well. This "deviation from health" would be more difficult to analyse, but, if time permitted, an attempt might be made.

Delirium lithicum.—I will cite only two cases more in order to show the advantage of constantly naming, and therefore being always obliged to search for, any existing diathesis or cachexia in cases of acute disorder. An innkeeper, aged 45, had pain and flatulence at bedtime, and was ordered some sal-volatile. He was known to be gouty and a drinker of beer, but these circumstances were not at first regarded. Next morning he was delirious, but he would put out his tongue; it was furred. He muttered and rambled, but nothing sensible could be got from him. A dose of white mixture and colchicum removed this state in a few hours. This may be called gouty delirium, or delirium lithicum.

Delirium malariosum.—Another innkeeper, aged 38, was more actively delirious than the last. He had had some pecuniary trouble and a serious quarrel in the day; he was seen in the evening. His friends thought he had gone mad; he was shouting and walking about. He lived near the river side, was not gouty, and it was ascertained that some shivering had preceded the delirium. A single large dose (six grains) of quinine removed the delirium in less than an hour. This was aguish delirium (D. malariosum). The precise naming of these cases was no great achievement, for I knew both these men and their habits pretty well, so that it was not so difficult as it might perhaps have been to a stranger to affix the proper adjective to the name descriptive of the acute disease. *Multiple diathesis.*—Occasionally, however, patients are met with who have been subjected to so many abnormal conditions of life that it is extremely difficult to ascertain which of them has produced or has helped to maintain an acute disease. Thus a man may have had syphilis, rheumatism, gout, and ague; he may also be living in an atmosphere containing sewer-gases; he may at the same time be mentally and physically overworked; he may commit smoking, drinking, and sexual excesses; and he may at length contract an acute disease, in the treatment of which any one or more of these pre-existing abnormalities may demand consideration. This is not a mere fancy picture. Probably the efforts made to name any existing diathesis in every case would eventually lead to more exact methods of inquiry for their discrimination—perhaps by new methods of examination of a drop or two of the patient's blood—and would result in enabling us to unravel even such a tangled web of phenomena as that above indicated.

Object of paper re-stated.—The object in adducing these cases has been to show that in spite of the general admission that diathesis does influence acute disease—that the patient, that is, his state or diathesis, and not the anatomical disease, is the proper object of treatment—there yet occurs in some cases a confusion which possibly the suggested formal and constant naming may prevent. For, though we may be liable to be led away for the moment by, for instance, the "restorative treatment of pneumonia," or by the "non-alcoholic treatment of disease," surely no one in his senses, having once compelled himself to name a pneumonia, Pneumonia lithica, could bring himself to administer brandy, eggs, and milk in profusion, merely because other cases and species of pneumonia (Pneumonia simplex) had been successfully so treated, or in a somewhat similar manner, for a distinct, specific, and temporary purpose; nor could he, in this latter case, refuse to employ the alcohol and the food. If the diathesis or blood-state, or bioplasm, or tissue-state, be of the importance we agree in assigning to it, surely it is extraordinary that we should give a name to that part of the disease which is of certainly sometimes lesser, and not give a name to that part also which is of admittedly sometimes greater, moment.

Prevention of other errors in treatment, e.g. of Pneumonia simplex as Pneumonia malariosa; of Pneumonia simplex as Pneumonia debilis.—To give a name to the diathesis in every case when it is in activity would also probably prevent such an error as I some years ago fell into, of, one may say, the converse kind to some mentioned above. For, while treating with quinine an aguish man, living in a marsh, for pneumonia, and satisfactory progress was being made, a young married woman living next door acquired pneumonia also. This, too, was supposed to be connected with ague, and various remedies were accordingly directed towards this taint, but they did no good, but rather, on the eighth day of the treatment, and the tenth or eleventh of the disease, she was worse, and had at that late period a temperature of 104°, pulse 120, respirations 34, and, what is more, she was instantly purged by each dose of the medicine—ammonium acetate. (This purging, or sometimes vomiting, after medicine which does not happen to be suitable, is a common occurrence.) Matters standing thus, antimonial wine, in 10-minim doses, was ordered every fourth hour. In forty-eight hours her temperature was 99°, and she was well straightway. Now this seems to have been a case of Pneumonia simplex mistaken for a case of Pneumonia malariosa. It may, indeed, be objected that the crisis had arrived in the natural history of the disease, independently of the quinine and the antimony alike; but I must defer the consideration of this objection, merely pointing out that "natural history" is not an unmodifiable sequence of events in any form or part of life. Again, in still earlier days than this, when the supposed, but perhaps rather the burlesqued, teachings of Todd had not yet lost their influence upon the minds of some, I treated a case of Pneumonia simplex in a vigorous young man from the very outset, with small but frequent doses of brandy, with the result of causing the most severe and active delirium I ever met with in a case of pneumonia. The same thing happened to a less extent in some other cases. It took no long time, however, nor many observations, to discover the error of such a practice as that, even without the aid of a positive nomenclature. But it is fair to say that some other cases—Pneumonia debilis—were by no means injured by the early administration of brandy.

Remarks.—Dr. Sturges[1] asserts that Hughes Bennett's published cases show that while he advocated the restorative treatment of pneumonia, he did not employ it in anything like all the cases, but used salines, laxatives, and even antimony and bleeding, according to the state of the patient; and in fact the more one reads of the restorative, the alcoholic, or any other treatment of pneumonia (and other acute diseases) which does not recognise and include the previous state of the patient, the more he sees that there is really nothing in such plans—that acute pneumonia will, if in moderate amount, get well with treatment by rest and temperature (not by nature) in a healthy, though not so certainly in an unhealthy body. And so again the diathesis is magnified and deserves a name, and the acute disease diminishes in importance. Of course I am aware that the acute disease is often of very great importance and very perilous in itself; but here, in addition to the attention properly bestowed upon it, there arises, if possible, more than ever the necessity of considering any actively existing diathesis also.

Names Suggested.—Some of the names suggested for various diatheses or dyscrasias have already appeared incidentally. A few more may be mentioned, but I do not put forward anything approaching to an exhaustive list. I have not, indeed, collected the materials for framing a list of the completeness even now possible. This can be done only by careful examination and naming of individual concrete cases and a comparison of the names they suggest. Taking pneumonia, whether chiefly exudative or epithelial, as the acute or anatomical disease, we might call it, when occurring in a previously healthy person, Pa. simplex; in a person whose blood contained uric acid in excess, Pa. lithica; in a full-blooded, not merely a stout person, Pa. plethorica; other species would be anæmica, uræmica, fibrinosa, malariosa, specifica (typhoides, typhosa, &c.) alcoholica, strumosa, and others; and possibly names compounded of these. Infantile and senile pneumonia have a claim to recognition as sub-species. It is evident that no great addition would be made to existing nomenclature by this plan. In the "Nomenclature of Diseases" of the College of Physicians there is (p. 29) a list of what may be called diathetic inflammations (pyæmic, rheumatic, gouty, syphilitic, scrofulous, gonorrhœal), but it is not laid down that these adjectives are in all cases to be appended to the names of inflammations occurring in special organs. *Advantage of proposed extension of naming.*—This is what it is now suggested should invariably be done; and thus to extend to *all* cases of acute disease a method of naming already employed in *some*, a method which has the advantage of presenting to the mind in one view the chief abnormal characteristics of the patient as well as the nature of the anatomical disease.

---

[1] *Relations of Pneumonia*, p. 215.

Since the first reading of this paper, Mr. Cautley Dawson, of Leeds, has favoured me with particulars of the following case. A gentleman had been under his care for some weeks with chronic bronchitis, and had been treated by the usual remedies without any benefit. He could not afford to neglect his business, but was obliged to go out in all kinds of weather. Mr. Dawson examined him with a view to discover any existing diathesis, and found that he was hæmorrhagic; wounds bled profusely, and he was subject to frequent bleedings from mucous membranes. Solution of ergot in thirty-minim doses three times daily cured the chronic bronchitis, and also a bleeding from the rectum within ten days. No change was made in his mode of life, and there was no special alteration in the weather. The ergot was continued for a short time with compound iron mixture; and in spite of some adverse influences, the patient remains quite well.

ON PHIMOSIS.

BY J. C. OGILVIE WILL, M.D.,

Surgeon to the Aberdeen Royal Infirmary.

During last autumn Dr. Gorrequer Griffiths described in the pages of a contemporary a mode of treating phimosis without the use of cutting instruments; in a subsequent number of the same journal, Mr. Clement Lucas showed that the mode of treatment suggested had been long known, and for several years I had myself been in the habit of employing it. Still, if one can judge from the number of cases operated upon, there appears to be considerable misconception regarding the indications for operation in phimosis; therefore a review of the subject may be deemed not unsuitable for the pages of the *Practitioner*. I may preface my remarks with the statement that, since the Lock ward in the Aberdeen Infirmary was intrusted to my care, fifteen months ago, though cases of phimosis have been abundant, and many of them severe, I have only found it necessary to use the knife in one case, all the others being brought to a satisfactory termination by non-operative procedures.

The following notes were compiled from various sources for a lecture which I delivered in the Aberdeen Infirmary during the present session.

Phimosis is either congenital or accidental.

Congenital phimosis is exceedingly common; so common is it that Van Buren says it may be almost considered normal. The foreskin of a child is developed out of all proportion to the rest of the penis, and this is often a cause of anxiety to young mothers, who often seek advice concerning the supposed imperfection of their offspring, and who are urgent for the surgeon to do something; but as a rule it requires no interference. If the prepuce can be retracted sufficiently to allow the glans to be seen, the opening in the prepuce is almost certain to become large enough to allow complete and easy retraction before puberty is reached.

An operation is, however, required in some cases, which may conveniently be classed under the following heads:—1. If the prepuce balloons during micturition, *i.e.*, if it gets distended with water—as in this case the preputial opening is smaller than that of the meatus urinarius, or the positions of the two orifices do not correspond, and some drops of urine being retained in the cavity at each act of urination, inflammation is almost certain to occur sooner or later, and will in all probability be followed by suppuration, vegetations, or adhesions. 2. If the opening in the prepuce be *very* small, even if ballooning does not occur, it is desirable to enlarge it, as cleanliness is hardly possible under such circumstances without far more care than parents or nurses will bestow. Smegma collects under the prepuce, and sets up chronic balanitis, which may be followed by adhesions between the glans and prepuce, which in turn may set up a certain degree of vesical and urethral irritation, these symptoms sometimes simulating those of stone in the bladder. 3. An operation is demanded in cases where adhesions have already formed between the parts just mentioned, as undue genital excitement is a not uncommon accompaniment of this state, the pressure continually exerted upon the glans by the contraction of the adherent prepuce keeping the organ in an almost constant state of irritation and erection. In Professor Sayre's recently published work on orthopœdic surgery, he devotes nearly a whole chapter to the consideration of the disastrous effects which may ensue from neglect of what has hitherto been considered a somewhat trivial affection—viz., adhesions between the glans and prepuce. He says: "The first step in the process is an almost perpetual excitation of the genital organs. This excitation is followed by partial paralysis, and this paralysis is accompanied by deformity." He gives cases in point—one of apparently contracted knee-joints, where Dr. Marion Sims had sent for him to divide the ham-string tendons, but Dr. Sayre demonstrated that the deformity was due to paralysis and not contraction, and proposed applying galvanism. While doing so, his attention was directed to the child's penis, which he found in a state of extreme erection. The body of the penis was well developed, but the glans was very small and pointed, tightly imprisoned in the contracted foreskin, and in its efforts to escape the meatus urinarius had become as puffed and red as in a case of severe granular urethritis : upon touching it the child was slightly convulsed, and had a regular orgasm. This was repeated a number of times, and always with the same result. The nurse stated that this was the child's general condition, and that he frequently awoke in the night crying on account of the pain, and that the same thing occurred when riding in a car, and that the friction of his clothes caused erections. Dr. Sayre, believing that this was the exciting cause of the deformity, pulled the prepuce forward, and cut a piece of it off: he then found the mucous membrane firmly adherent to the glans throughout almost its entire extent. He next forcibly tore the membrane from its abnormal adhesions, when a hardened mass of sebaceous material was found behind the corona. The operation was concluded in the usual manner. From the very day of operation the child began to improve: at the end of three weeks he could extend his legs perfectly when lying on his back, and in another fortnight he was able to walk alone with his limbs quite straight. No remedies either internal or external were employed, and no means were taken to restore his limbs to their normal position, excepting the proceeding just narrated, by which the child's nervous system was quieted.

He also relates cases of talipes equino-varus, and paralysis of the lower extremities with prolapsed rectum, due to the same cause, and treated in a like manner, with similar results. Curvature of the spine has also been met with as a result of phimosis with adhesions. The three conditions enumerated are those which decidedly demand operative treatment, but some authorities go much further. Erichsen, for example, holds that " every child who has congenital phimosis should be circumcised, and even those who, without having phimosis, have an abnormally long and lax prepuce, would be improved greatly in health and morals by being subjected to the same operation; and it would be well if the custom of Eastern nations, whether it be regarded as a religious rite or only as a time-honoured observance, were introduced among us." Mr. Jonathan Hutchinson has shown by statistics that syphilis is much less common among Jews than among Christians, and this is so far to be attributed to the practice of circumcision; and it is a universally recognised fact that persons with long foreskins, and especially those affected by congenital phimosis, are peculiarly subject to venereal diseases. Still, for my own part, I fail to see that it is the province of a surgeon to pander in any way to the vicious appetites of his patients.

Accidental phimosis may arise from many causes, such as neglect of proper cleanliness, soft sores, hard chancres, gonorrhœa, herpes, vegetations, or, in other words, from any cause by which the glans penis is so enlarged that it will not pass through the preputial orifice, or by which the prepuce is so thickened and contracted that it cannot be retracted. From the causes enumerated it may be seen that accidental phimosis, though generally venereal in its origin, is not necessarily so, and this fact should not be lost sight of, for one is apt to regard all cases of non-congenital phimosis with suspicion even in spite of the asseverations of the patient to the contrary; and the occasional occurrence of preputial contraction without any visible or evident cause to account for the phenomenon should also be borne in mind.

Treatment of accidental phimosis.—The rule is to avoid an operation if at all possible, unless congenital phimosis has existed previously, as inflammatory phimosis is a transient condition—it may leave true phimosis behind from thickening and contraction of the preputial orifice, but this is comparatively rare. In hardly any case should an operation be performed if the inflammation depends on the presence of concealed chancroids, as there is every probability of the edges and surfaces of the wound being inoculated with the chancroidal poison, the only possible justification for operating being the occurrence of sloughing or hæmorrhage. A striking example of the danger of operating on phimosis dependent on soft sores was recently brought before me in the case of a hospital patient, where an incautious surgeon had slit up the prepuce, and had sent the point of the knife through the glans, inflicting a long and deep wound on its dorsal aspect, the urethra barely escaping. The whole cut surface had become converted into an enormous chancroid. In many cases it is impossible to ascertain—in the absence of a reliable history—the form of lesion which set up the inflammation, but in all it is well to attempt to subdue it as quickly as possible. If the case be an acute one, the patient should be confined to bed, the penis should be kept well elevated, and an evaporating lotion or ice applied. Some mild astringent and anodyne solution should be prescribed, which the patient may inject very frequently; it may be used either warmed or cold, and in this I am guided in a great measure by the patient's feelings. In sub-acute cases, which are infinitely more common, I generally advise the injection of a lotion containing sulphate of copper, salicylic acid, sulphate of zinc, or lead and opium, to be repeated once an hour during the day, and retraction of the foreskin to be attempted from time to time. This mode of treatment nearly always proves successful, and if it be patiently and carefully carried out I feel convinced that operative procedures will be but seldom called for.

An operation is, however, demanded in certain cases, viz.:—1. When after a prolonged trial of injections the discharge still continues and the prepuce cannot yet be retracted. Here the prolonged discharge is probably due to vegetations. 2. If gangrene threatens to supervene. 3. If discharge has ceased, but phimosis continues. The last-mentioned state may be due to *true hypertrophy* of the affected parts, following the cicatrization of hard or soft sores, or to contraction of the preputial tissues, especially at the orifice, after multiple chancroid, but it may, and often does, depend upon the presence of syphilitic induration, which will disappear with appropriate internal medication, thus obviating the necessity of an operation, and forming an exception to the last of the three rules given.

Operative Treatment.—Regarding the operations for the relief of phimosis little need be said, for though very many different modes have been proposed, the more usual methods are so well known that their description is uncalled for.

For congenital phimosis in the adult the mode advocated by Griffith of gradually retracting the foreskin, and at the same time pushing the glans forwards, should be tried first, the manœuvre being repeated every day until retraction is complete. The use of a small forceps, inserted with closed blades, expanded when within the cavity and withdrawn open, will expedite the progress considerably, and is indispensable if the orifice be very tight and unyielding. Special forceps have been constructed for the purpose, but Griffith uses a pair of common dressing forceps, and I have found that instrument perfectly efficient. Failing this mode, circumcision should be practised, and in the case of infants it should be prefered to the gradual method. Circumcision is also well adapted for accidental phimosis, for, as Bumstead remarks, " Partial operations often fail to afford permanent relief, and leave the organ in a misshapen condition. The purposes of elegance and utility can best be subserved by circumcision." Slitting along the dorsum is followed by considerable deformity, however well the edges are trimmed; but this is avoided by Mr. Furneaux Jordan's operation, and as the desired end is gained with equal certainty by its use as by dorsal division, it should be selected when circumcision is considered undesirable. It consists in notching the orifice of the prepuce with a knife at as many separate points as may be required to admit of partial retraction, and then slitting the mucous membrane so as to allow of complete retraction. Professor Lister, in one of his papers on Antiseptic Surgery, published in 1875, warmly approves of this proceeding, and after operation he recommends that the parts should be washed with a one to twenty carbolic solution, and that a narrow strip of boracic lint should be wound round the penis and retracted prepuce. During the progress of the healing process the foreskin should be drawn forward once daily and immediately retracted.

DICTIONARY OF MEDICAL LITERATURE.

BY THE EDITOR.

Everyone knows how difficult it is to find out what has already been written about any subject whatever, and medicine is no exception to the rule. The writings of the past are forgotten, and every day new inventions are produced, new ideas brought forward, which, on examination, prove not to be new births, but merely resuscitations. Every day the difficulty is increasing, for the most valuable discoveries instead of being recorded in books or pamphlets, as formerly, are now published in the journals, and unless one possesses some guide to the particular journal containing the paper required, much time is lost in hunting through the indexes of various periodicals. To save the time of scientific workers, the Royal Society has published a catalogue of the scientific papers which have appeared in the various periodicals since the beginning of the century. The desirability of a similar catalogue of medical literature is self-evident, but the labour involved in its production is so great that most persons would shrink from the task. Fortunately for medicine, however, it has been undertaken by Dr. Billings, of the United States Army. The manuscript catalogue is now nearly ready, and a printed specimen fasciculus has been sent to us. The title is *Catalogue of the National Medical Library*, under the direction of the Surgeon-General, United States Army, at Washington. The work, as its name implies, is not a complete medical bibliography, for it gives only the books and periodicals contained in the National Medical Library, and this does not by any means contain every medical book ever published. Yet the books and and pamphlets together amount to nearly 80,000, and the catalogue does not merely give the names of the authors, it is also an index of subjects. But the great point about the library is its collection of periodicals. The authorities are striving to obtain every periodical medical publication ever issued, and they have already obtained them all with the exception of those given in the subjoined list. The papers contained in these publications have all been catalogued under both the authors' names and the subjects of which they treat. Anyone meeting with a rare case in practice and desiring to find out whether it has been observed before, or anyone wishing to write a complete paper on any medical subject, will thus save, by means, of this catalogue, the time and trouble which he now loses in looking through the indexes of all the periodicals, English and foreign. It is evidently most important for every worker in medicine that the list of papers should be perfectly complete. But the catalogue only gives the papers in the journals which the library contains, so it is the interest of every medical man that the collection of journals in the library should be, as far as possible, perfect. The authorities have done all in their power to render it so, but several numbers, or even series of periodicals are now out of print, and not to be bought. These can only be obtained by the help of medical men, who having them in their libraries, are willing to benefit medical science by either selling or presenting them to the National Medical Library. The catalogue of this library is really an international work; it will be an incalculable personal benefit to every writer on medical subjects, and we earnestly hope that every one of our readers, in whatever part of the world he may be, will do his utmost to aid the authorities of the National Medical Library to render their catalogue complete. We append a list of the periodicals they still require.

List of English Medical Journals wanted for the National Medical Library, Washington, D.C. Address, Dr. J. S. Billings, Surgeon, United States Army, care of Trübner and Co., 57 and 59, Ludgate Hill, London.

Anderson's Quarterly Journal of the Medical Sciences, 8vo. London, J. Anderson. Want title page of Vol. II., Vol. III., and all after.

Association Medical Journal. By J. R. Cormack. Weekly, London. Want January—December, 1853.

Asylum Journal of Mental Science (continued as Journal of Mental Science). London. Want all prior to October, 1855. No. October, 1865.

Australasian Medical and Surgical Review. By J. Keene, Melbourne. Want Nos. 10, 11, Vol. I. (Dec. 1863—Jan. 1864). Nos. 12, 17, &c., Vol. III. (1865—66); and all after Vol. III. till beginning of Vol. I. 2nd series (October 1, 1873).

Australian Medical Gazette, Melbourne. Want Nos. 1, 4, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 24, 26, 27, 28, 30 31, 32, 33, 34, 35, 36, 46, &c. (1869—71, &c.)

Australian Medical Journal. Quarterly. Melbourne. Want Vol. IV. (1859).

British Medical Quarterly Review. London. Commenced about 1834. Want all or any part.

Calcutta Journal of Medicine. Monthly. Want all prior to October, 1873.

Continental and British Medical Review. London, Commenced about 1837. Want all, or any part.

Dublin Journal of Medical Science. Bi-monthly, 8vo. Two Vols. annually. Want Nos. 48, 49, 52, 53, 55, 56, that is, No. 3, Vol. XVI. (Jan. 1840); No. 1, Vol. XVII. (March, 1840); Nos. 1, 2, Vol. XVIII. (Sept. and Nov. 1840); Nos. 1, 2 (March and May, 1841).

Glasgow Medical Examiner. Monthly. Want Vol. I. 18. 31.

Glasgow Medical Journal. Quarterly. William Mackenzie. Want Vol. IX.

Indian Register of Medical Science. By E. J. Edlen. Jan.—Oct. 1848. Want all.

Indian Annals of Medical Science, &c. Half-yearly. Calcutta. Want No. 3 (Oct. 1854).

Indian (The) Lancet. Commenced 1859. 7 Nos. or more were issued. Want all or any part.

Indian Medical Gazette. Monthly, 4to. Calcutta. Wyman & Co. Want Nos. 2, 3, 4, 6, 8, 10, 11, 12, index and title sheet, Vol. II., 1867; No. 5, Vol. VI. (May, 1871); index and title sheet of Vol. IX. 1874.

Liverpool Medical Gazette, &c. By H. Lane. Monthly. Commenced about 1833. Want all or any part.

Liverpool Medical Journal. Monthly. Commenced about 1834. Want all or any part.

Liverpool Medico-Chirurgical Journal, &c. Wamsley. Want any after No. 5 (1859).

London Medical Review. Commenced 1808. Want all after Vol. II. 1809.

London Medical Review and Magazine (in two series, title, The Medical and Chirurgical Review). Monthly. Commenced about 1799. Want all except Vol. VI. 1801.

London Medical and Surgical Journal. By J. Davis and others. Monthly, Two Vols. annually. Want Nos. 4—6, Vol. III. (Oct.—Dec. 1829); Vols. IV.—VII. (1830 to Jan. 1832); all after No. 270 (April 1, 1837).

London Medical and Surgical Spectator. Commenced about 1808. Want all or any part.

Madras Quarterly Journal of Medical Science. By H. S. Montgomery and William R. Cornish. Commenced July, 1860. Want Vol. II. No. 1, Vol. III.; all since October, 1869.

Medical Intelligencer, or Monthly Compendium, &c. 4 Vols. London (1820—1823). Want Vol. IV. 1823.

Medical and Physical Journal. By J. North and J. Whalley, 8vo. London. Want pp. 145—152, in No. for Feb. 1833 (Vol. XIV. new series).

Medical Quarterly Review. By J. North and G. J. Burnett. 4 Vols. 8vo. London (1833—4). Want all, or any part.

Medical Times. Weekly. London. Want Vols. I., II. (Sept. 28, 1839, &c.); whole Nos. 94, 95, 97, Vol. IV. (July, 10, 17, 31, 1841).

Medico-Chirurgical Journal and Review. By J. Johnson. London. Commenced in 1816, continued in 1819, as Medico-Chirurgical, or London Medical and Surgical Review. Want Vol. II. (July—Dec. 1816); also Vol. II. Quarterly series (July, 1819—April. 1820).

Monthly Archives of the Medical Sciences. By Dr. Hunter Lane. 8vo. London and Liverpool. Commenced about 1833. Want all, or any part.

Ophthalmic Hospital Reports, and Journal of the Royal Ophthalmic Hospital. Want Vol. I. 1857—59; also index and title sheet of Vol. III. (1860—1).

Provincial Medical and Surgical Journal. By H. Green and others. Weekly. London. Want Vol. I. (1840—41).

Quarterly Medical Recorder. By W. Religh Baxter. London, Renshaw, 1850. Want all, or any part.

Sanitary Review and Journal of Public Health. Commenced as Journal, &c. By B. W. Richardson. Quarterly, 8vo. London. Want Vols. V., VI., VII., VIII. (1859—63).

Reviews.

1. *A Treatise on the Diseases of Infancy and Childhood.* By J. Lewis Smith, M.D., Physician to the New York Infants' Hospital, &c., &c. Third Edition, enlarged, thoroughly revised, with Illustrations. London : H. K. Lewis, 1876.
2. *Clinical Studies of Disease in Children, Diseases of the Lungs, Acute Tuberculosis.* By Eustace Smith, M.D., F.R.C.P. Lond., &c., &c. London: J. and A. Churchill, 1876.

When a work like that of Dr. J. Lewis Smith arrives at the third edition it may be safely granted that its repeated appearance has established for it a claim to the possession of substantial worth, so that the book may be fairly considered almost independent of criticism. We may further allow that if this had been the first instead of the third edition of Dr. Lewis Smith's work, we should have gladly availed ourselves of the opportunity to point out in more detail its many excellences, and particularly to draw attention to the fulness of its information, the fairness with which the reasoning is conducted in relation to disputed questions, and the completeness and soundness of its therapeutical suggestions and recommendations. We must, however, observe that some important additions are made in the present edition, and we more particularly notice a very long and valuable article on cerebro-spinal meningitis, based chiefly upon the author's experience of the epidemic of this disease which occurred in New York during the spring of 1872. Dr. Smith regards this affection as most probably due to some general atmospheric cause, and looks upon it as little if at all contagious. The article on Diphtheria has also been in a great measure rewritten, and contains a very fair and full account of our present knowledge of that destructive disease. Like Steiner he is not disposed to give adhesion to the theory of its bacterial origin, but is inclined to look upon the demonstrated presence of those organisms in the tissues of sufferers from this disorder rather as an effect than as the cause of diphtheria. Like Dr. Steiner he holds on by the theory of an exudative and a diphtheritic croup, but he allows that the former is seldom seen nowadays. He ingeniously suggests that the explanation of this fact may be that the poison of diphtheria which is now so common, constantly seizes the membrane of exudative croup, and, developing there, changes the original character of the exudation.

This argument seems to us akin in weakness to the old theory of change of type in disease, which was created to cover the retreat of the medical profession from the abuse of blood-letting. It seems to us that the first sentence of the article, viz. "Diphtheria is a disease of antiquity," removes entirely any force that might appear to be possessed by the reasoning. If the germs of diphtheria prevent the normal development of exudative croup, the latter disease surely ought never to have been seen since the days of Aretæus at any rate.

It appears to us that an easier escape from these difficulties is to accede to the doctrine that croup when accompanied by false membrane is nothing more nor less than laryngeal diphtheria. The work is perhaps a little loosely written, but it contains a very large amount of valuable material, and the results of very extensive practice. It is particularly good in the remarks upon the treatment of disease, which, though the most important, is often treated with little thoroughness in a systematic treatise. From its completeness and fulness we consider it is much better suited for a student's text-book than Steiner's work, though it is not so accurate in its pathology.

Dr. Eustace Smith had already led us to expect good work from him by his book on the wasting diseases of children. We feel, however, that he has more than come up to the high expectations which that work originated by his *Clinical Studies of Diseases in Children.* By publishing this volume he has laid the department under fresh obligations to him. We have read the book with intense delight. Though one could have wished that Dr. Smith had been able to include a wider range of disease than he has found practicable in *Clinical Studies,* we receive the present contribution with gratitude in the double sense of thankfulness for mercies received and of anticipation of future favours. We hope this is not the last volume which we shall see come from his pen. He has taken up the classes of clinical diseases which are most especially common in childhood, and present the greatest difficulty to the student of pædiatrics, and he has managed his task with great ability and success. The cases included are well taken and admirably chosen, and serve very materially to impress the subject forcibly upon the mind of the reader, whilst they lessen the tedium that is apt to fall upon one when reading a systematic work. We commend for particular study his articles on Pulmonary Collapse, on

Fibroid Degeneration of the Lung, and on Pleurisy. We reckon these of especial value. He also points out more clearly than we have ever seen the persistence of bronchial breathing in children in the case of pleuritic effusion and of empyæma, under circumstances in which we should have complete absence of respiratory sound in the adult. Everyone who has seen many cases of empyæma or of pleurisy with effusion in children has had occasion to notice this fact. We well remember the amount of fear and trembling with which we tapped our first case of empyæma from observing this phenomenon, and not being aware that it was generally so, we greatly underestimated the amount of fluid present. Of course reliance upon more obvious signs guided one's action; but Dr. Eustace Smith in bringing this peculiarity so prominently forward is making things much more smooth for the student of this important subject. His remarks upon the diagnosis between pneumonia and pleurisy and pulmonary collapse are very good, though open in some particulars to dispute.

But the book, as a whole, is above all praise. We hope to see soon a new work by the same author on some other class of disease in children. In the meantime we cordially recommend the volume before us as in every way worthy of the attention of our readers.

Medicinal Plants; being Descriptions, with Original Figures of the Principal Plants Employed in Medicine, and an Account of their Properties and Uses. By ROBERT BENTLEY, F.L.S., Professor of Botany in King's College, and of Botany and Materia Medica to the Pharmaceutical Society, &c., and HENRY TRENIEN, M.B., F.L.S., Department of Botany, British Museum. Parts I.—XII. London: Churchill.

DURING the last few years a number of new remedies derived from the vegetable kingdom have been introduced, and much new knowledge has been obtained regarding the true nature of the plants from which many old medicines are derived. The latter subject is carefully and amply discussed in Hanbury and Flückiger's *Pharmacographia;* and information regarding the composition and action of new remedies may be found in the handbooks of materia medica recently reviewed in this journal, as well as in the current medical and pharmaceutical journals; but almost every one interested in medicines has felt the want of accurate representations of the plants yielding the drugs he employs. This want is supplied by the present work, which contains coloured illustrations, natural size, of the plants which yield the drugs in common use, and also of others which, although not official here, are included in the United States

Pharmacopœia or in the Pharmacopœia of India. Some others, which afford food-substances chiefly of value to invalids, have also been added. The drawings have either been made from living plants or, when this was impossible, from dried specimens. Each plate is accompanied by a full description of the plant with its nomenclature, geographical distribution, as well as an account of its properties and uses. Full references are also given to previous descriptions and figures, and to special treatises. The illustrations are very well drawn, and although we sometimes, *e.g.*, in hyoscyamus or helleborus niger, miss the delicate tints which give a charm to the plates of Stevenson and Churchill's *Medical Botany*, the colouring is upon the whole good. We are pleased to find a plate of the plant yielding guarana amongst the parts already published, and we shall look forward with interest to similar illustrations of those yielding jaborandi, coca, and other remedies of recent introduction. We trust that after the work is finished the authors will occasionally issue a supplementary part, with figures and descriptions of such new plants as may from time to time be brought under the notice of the medical profession. The high position of both authors is a sufficient guarantee for the accuracy of the botanical descriptions, and it is perhaps hardly fair to ask for a somewhat fuller account of the actions and uses of the different plants than they have given, yet we would suggest that they should, at any rate, give a longer account of the action and uses of the new remedies which are not to be found in every text-book. Fuller references to original papers on this subject would also be useful in the case of both old and new remedies. But although we think the book capable of improvement in this respect, in others it is excellent, and we welcome it as a valuable, and indeed almost indispensable, addition to every materia medica library.

A Manual of Ophthalmic Surgery. By B. THOMPSON LOWNE, Ophthalmic Surgeon to the Great Northern Hospital. Smith, Elder, & Co.: 1876.

THE number of books on ophthalmic medicine and surgery in our language is so considerable that it would seem to be somewhat doubtful whether there was either room or a call for another. It must be acknowledged, however, that several of those recently published are of so large a size as to make the student feel that it is hopeless to attack them, and that they are really intended as books of reference, to which the practitioner can apply for information on meeting with a case in the course of his ordinary practice. The great difficulty of writing a primer on such a subject as diseases of the eye is to keep to really broad principles, the temptation to descend into particulars being almost overwhelming. This arises from the circumstance that the minutest changes in the many structures of which the eye is composed have received definite names very useful to masters of the art for the purpose of discriminating closely allied forms of disease, which sometimes require very different treatment, but which, if they receive separate mention and short description, reduces the book at once to a mere dictionary, which conveys but little information to the student. Yet when a writer gives only principles the result is apt to be bald and uninteresting, and very important special points are left out altogether. If Mr. Lowne has erred, it is, we think, in the last-named way. If we take his account of such a typical disease as iritis, whilst the general characters of iritis are sketched accurately enough, we think these might have been described more fully. In many instances it is not by the change of colour of the iris alone, nor by the turbidity of the aqueous humour, nor even by its sluggish response to variations of light, that the disease is recognised, but by a certain indistinctness or blurring of the markings on its surface; to this attention should always be called by a teacher. Then again the characters, and results, and treatment of the adhesions so apt to occur between the iris and the capsule of the lens, as a result of iritis, and the importance of a knowledge of which is very great, are almost entirely omitted. Synechia posterior is not mentioned by name, and scarcely alluded to in substance. The subject of glaucoma is well given. That of the treatment of foreign bodies is far too short to be of any service to the learner; even the very common event of the presence of a minute piece of grit on the conjunction of the upper lid is omitted. The chapter on lenses requires rewriting. The focus of a spherical glass cannot be described as *the distance from it* at which a definite picture of distant objects is formed. It is the *point* at which parallel rays or those coming from a distant object are united. The chapter is much too short, and a student would, we imagine, make little out of the sentence in which Mr. Lowne observes that "the power of a periscopic glass is equal to the difference of the reciprocals of the focal lengths of its curves." In describing the cases of trial glasses it would have been well if Mr. Lowne had confined himself to the metrical system, as this seems to be gradually superseding the old system of French or Prussian inches. On the whole, Mr. Lowne appears to us to have hardly done justice to his own knowledge and experience of diseases of the eye, and we expect to find considerable improvement in the next edition of his *Ophthalmic Surgery.*

Clinic of the Month.

The Use of Volition and Manipulations in the Treatment of Paralytic Affection.—Mr. Maclean, of University College, draws attention to the importance of the will as a therapeutic agent in paralysis, as was long ago advocated by John Hunter and others, and then refers to the value of manipulation applied to the nerves, as recommended by Dr. Kellgreen. Friction, he remarks, is the only form of manipulation ordinarily made use of by the profession in the treatment of paralysis, and when this is ordered the 'medical rubber' is usually called in, and is left without instruction to his own devices, which usually consist in rubbing the skin with varying degrees of force, using as a lubricating agent some oil, to which special virtue is ascribed. On reflection, it is obvious that such manipulation can have little effect on anything but the skin itself. In order to affect the deeper strictures a manipulation of a kneading or pummelling character is necessary, and that this will produce contraction in muscles is well known to the physician, who frequently sees the pectoralis major thrown into flickering contractions when he is percussing. Mr. Maclean then gives a case of injury of the ankle joint, which resulted in stiffness, that had lasted for a year, but in which a cure was effected by the employment of passive movement while the patient was under the influence of an anæsthetic and faradisation, and after pummelling of the calf had been made use of daily for about ten days. (*Lancet*, March 3, 1877.)

Treatment of Syphilitic Warts.—Mr. Maunder recommends that syphilitic warts should be removed with scissors on a level with the skin, but without cutting away any of the skin itself, perchloride of iron should then be applied, followed by frequent ablution, which will prevent their recurrence. If the patient be a male, circumcision should be the first step in the treatment. Syphilitic warts of recent formation will quickly vanish under the internal administration of mercury. Dr. Berry, of Wigan, recommends the application of the acid nitrate of mercury, having found that it will often remove large masses of warts when nitric acid has had little or no effect. Mr. A. Angus states that he has used for many years without failure a powder composed of equal parts of acetate of copper and savine, which should be dusted over the diseased mass daily, carefully washing before each application. Another correspondent suggests the employment of glacial acetic acid, and yet another snipping of the warts with scissors and the application of solid nitrate of silver. (*British Medical Journal*, March 10.)

Treatment of Nocturnal Cramp.—Dr. Murray, of Newcastle, suggests that when cramp in the leg and pain in the instep occur in aged patients, the symptoms are produced by the irritation of a calculus in the pelvis of the kidney of the same side as that on which the pain is felt, and recommends the use of bromide of potassium, tartrate of potash, tincture of hyoscyamus, and infusion of calumba. If, however, the urine give an alkaline reaction, he prefers the administration of hydrate of chloral, hydrochloric acid, and tincture of hyoscyamus in some simple bitter. A copious draught of barley water or other demulcent, made with distilled water, should be taken after each dose, and a belladonna plaster may be placed over the kidneys. Dr. Mayo recommends the administration of five-grain doses of citrate of lithia twice or three times a day, with the application of (rather lightly) a rough flannel or serge bandage from the toes to the knee every night at bedtime. He considers cramp to be usually associated with rheumatic or gouty diathesis. An anonymous correspondent refers to Dr. Bardsley's treatment, which consisted in raising the two front feet of the bed about eight inches without the patient's knowledge of what has been done. Another correspondent recommends the internal administration in full doses and the external application of spirits of camphor, and yet another the employment of a warming-pan and foot-warmer. (*British Medical Journal*, March 10, 1877.)

Acute Rheumatism Treated with Salicylic Acid.—Dr. Ogle, of Derby, gives the details of four cases of acute rheumatism treated by salicylic acid. In all there was a marked and rapid disappearance of all the physical signs of the disease. The heart complication which existed in three out of four, and in one of them to a serious extent, seemed to be equally benefited. During the treatment with the acid the patients were bathed in a copious perspiration, the bedding having frequently to be changed. In the last three cases, where large and frequent doses (twenty grains every hour for the first six hours, and every succeeding four hours afterwards) of the acid were taken, the remedy seemed to produce very great depression, with a very slow and soft pulse, and perhaps convalescence was protracted (after the rheumatic symptoms had disappeared) on that account. It seems probable that a stimulant, as ammonia, given in small doses with each dose of the acid might obviate this result to some extent. The third case, reported by Dr. Ogle, was remarkable, inasmuch as the patient, a girl of eighteen, after taking one hundred and eighty grains in eighteen hours, appeared to be suffering from all the effects of severe cinchonism, and he has observed a similar result in another case. This would decidedly seem to point to a similarity of its action with that of quinine. In all the cases the acid was given in solution with bicarbonate of soda, just sufficient to dissolve it. It was found to be preferable to giving a large dose of an insoluble powder; while with the soda it forms an agreeable mixture, almost without taste, quite in contrast to the solution of the acid in borate of soda, which is decidedly the reverse of pleasant. (*British Medical Journal*, March 17, 1877.)

Erythroxylon Cuca in the Treatment of Febrile Diseases.—Dr. McBean, of Newcastle, refers to the observations of Dr. Ringer, showing that in all febrile diseases, with the exception of yellow fever, the amount of urea formed is abnormally increased, and that as urea represents the wear and tear of the frame (tissue metamorphosis) it may be regarded as affording, in fever, not only an index of the severity of the disease, but also a direct clue to an exceedingly important line of treatment. Dr. McBean submits that as throughout the duration of a case, say of typhus fever, there is present a specific morbific agent which so influences the sympathetic nervous system as to produce or permit an amount of tissue metamorphosis (indicated by the increased quantity of urea excreted) not only incompatible with health, but most probably productive of the various febrile phenomena, the sum of which constitutes this disease; therefore to restrain such metamorphosis until the morbific agency has ceased to exist is clearly indicated as the most desirable end to accomplish in treatment. To accomplish this end he believes we possess a very efficient remedy in cuca, the dried leaves of the erythroxylon cuca. Dr. McBean gives several cases in which good recovery took place after the use of cuca. He states that he has also found cuca of great service in both acute and chronic pneumonic phthisis. Where there is much febrile excitement, it lowers the temperature and restrains, or materially alleviates, the distressing perspiration. (*British Medical Journal*, March 10, 1877.)

Treatment of Typhoid Fever.—In notes made by Dr. Edebohls on the mode of treating typhoid fever in St. Francis Hospital, New York, it is stated that iodine has usurped the place of the mineral acids, and is given internally in all cases. It is believed to lessen the troublesome gastric irritation so often present, and to diminish the number of evacuations from the bowels. The formula usually employed is, ℞ Iodinii ʒj., Potassii iodidi ʒij., Aq. Dist. ʒx. Misci. Three drops to be taken in a wineglassful of water every three hours. Lugol's solution, the Liq. Iodinii Comp. of the Pharmacopœia, may be used in doses of six drops every three hours. In patients possessing the average physical strength, and sick with typhoid fever, the cold bath is employed promptly whenever the temperature of the body rises above 103½° F. The patient is immersed to the neck in water having a temperature of 85°–90° F., and cold water is then steadily added, until a bath having a temperature of from 38° to 60° F. is obtained. After remaining in the bath from ten to twenty minutes the patient is removed, rubbed dry, enveloped in a blanket and put in bed, and an ounce of brandy administered to aid in establishing reaction. The thermometer is used fifteen minutes after the patient has been placed in bed, and the temperature in the rectum of a male and in the vagina in the female, has, as a rule, been found to have been reduced from 2½°–4° F. If at any time during the employment of the bath symptoms of marked prostration supervene—as evidenced by decided chilliness, lividity of the surface, most readily detected on the prolabia and nails, chattering of teeth, &c.—the patient is immediately taken out of the water, rubbed dry, and warmly covered in bed. In conjunction with the cold bath, quinine might or might not be administered. When, for any reason, cold water is contraindicated, chief reliance has been placed upon the antipyretic influence of quinine. The drug has been used in the following manner:—1st. It has been given in small doses, frequently repeated (five grains every two or three hours). 2nd. Twenty or thirty grains have been administered in one or two doses at the time when the temperature was highest, generally late in the afternoon. 3rd. The same quantity has been administered in one or two doses when the temperature had about reached its lowest point. Of these three methods the first had exercised but little influence in controlling the temperature; the second had generally yielded tangible results in so far as the temperature, taken from one to two hours after the administration of the drug, had generally been found to have been more or less reduced; but the improvement was only transient, and another large dose was soon required. The third method was considered the most judicious, and was the one generally employed. (*The Medical Record*, No. 314.)

Extracts from British and Foreign Journals.

Necessity of Caution in the Use of the Aspirator.—E. Pingaud adduces two cases which show that under certain circumstances the application of the aspirator may cause rupture of blood-vessels and dangerous symptoms. In one of the cases a man met with a railway accident, causing a compound fracture of the skull and strong depression, which was not removed after the trepan had been twice applied. Ten days subsequently symptoms of intracranial suppuration made their appearance. M. Pingaud passed the needle of Dieulafoy's apparatus through the dura mater and the brain, and, after several unsuccessful penetrations, some brownish-coloured pus escaped by the tube. The canula was not immediately removed, and a sudden flow of blood took place, which instantly produced the most severe cerebral symptoms, complete paralysis, deep coma, stertorous breathing, and dilatation and immobility of the pupil. In order to diminish the pressure which had been occasioned by the hæmorrhage into the cavity of the abscess, M. Pingaud divided the dura mater freely, and made the point of the bistoury enter the cavity. A few grammes of blood escaped, and the grave symptoms immediately disappeared. Death, however, took place on the following morning. Post-mortem examination showed a fracture of the base of the skull. The cavity of the abscess was filled with fresh coagulum of blood, which had burst through the walls of the lateral ventricle, and had filled all the ventricles. In the second case a puncture was made into an abscess resulting from caries of the vertebræ. Very little pus escaped, mingled with a few drops of blood. The canula was immediately removed, but the whole cavity became tense with blood; distinct fluctuation was perceptible; recovery took place by absorption. (*Gazette Hebdomadaire* and *Centralblatt. f. Chirurgie,* No. 30, 1876.)

External Application of Mercury.—C. Balogh, in a communication to the Medical Society of Buda-Pest, states that rabbits died after the inunction of fifteen grains of Unguentum Hydrargyri in from nine to ten days (33 milligrammes of finely-divided mercury to 100 grammes of body weight are thus fatal). The skin of the dead animal was submitted to microscopical examination, and fine globules of the metal were found in the hair follicles and sweat glands, as well as in the connective tissue-cells and the interstices of the tissue, the particles which were most deeply situated being the smallest. Balogh believes that the mercury is volatilised in this mode of administration at the ordinary temperature of the body, and is then absorbed by the fluids of the body and by the blood. Black oxide of mercury, which is always contained in mercurial ointment that has long been made, proves fatal in somewhat smaller doses than pure mercury. It also penetrates into the cutaneous glands if rubbed in with fat, and breaks up in passing into valerianic and capronic acids in combination with mercury, and finally into the pure metal. The yellow oxide of mercury in solution in oil is far more energetic than either of the above preparations; it proves fatal to rabbits when applied externally, even in doses of 4 milligrammes to the 100 grammes of body weight. In a ten per cent. solution it causes violent dermatitis, and very rapidly produces its general poisonous effects. The easily-oxidisable oleic acid quickly burns in the body, and the mercury is distributed through the body in *statu nascendi* as a gas. M. Balogh believes that in mercury—albuminate solutions—the mercury is in the regulinic state. The rabbit experimented on lost appetite and weight, the temperature fell, and diarrhœa, dyspnœa, and albuminuria supervened. After death the brain was found to be anæmic, the lungs hyperæmic, the villi of the small intestine were detached, the Lieberkuhnian follicles were swollen, and fatty degeneration was observed in the liver, kidneys, brain, and other organs. The preparations of mercury cause the disappearance of syphilitic neoplastic formations by causing them to undergo fatty degeneration. (*Centralblatt f. Chirurgie*, No. 32, 1876.)

Treatment of Carbuncle.—Raimbert, supported by the views of Davaine, that the origin of carbuncle and of the so-called malignant œdema is connected with the migration of poisonous bacteria, which can be rendered innocuous by antiseptic means, treated the following cases by the subcutaneous injection of carbolic acid:—1. An artisan, forty-six years of age; the vesicles appearing behind the ear, followed rapidly by infiltration of the whole face, and great prostration. Treatment by means of the actual cautery, then with sublimates, proved unsuccessful; but repeated injections of a two per cent. solution of carbolic acid effected a cure in twenty days. The infection apparently took place from a diseased sheep. 2. A labourer, aged forty-eight; carbuncular pustule in the hand from injection of the blood of a diseased cow. Three days after the infection the wound was cauterised with caustic potash, but the swelling extended up the whole arm. Repeated incisions and cauterisations proved totally ineffective, but injections of carbolic acid (diluted), after producing momentary syncope, caused rapid improvement and ultimate recovery, though the skin became gangrenous on the ring finger. 3. A woman, twenty-three years of age, in the seventh month of pregnancy, in whom the disease probably arose through the skins of animals. A carbuncle appeared on the cheek with extended infiltration and gangrene of the skin. On the evening of the third day subcutaneous injections were made with diluted tincture of iodine, improvement occurring in the local symptoms, but the child died, abortion taking place on the eighth day, followed by considerable hæmorrhage, with steadily increasing debility and attacks of swooning, and death on the tenth day from the commencement of disease. Microscopical examination of a blood coagulum taken from the patient whilst living contained no bacteria. M. Raimbert arrives at the following conclusions:—Cauterisation of a fresh carbuncle is rational because it destroys the bacteria, which may be supposed to be in the skin and especially in the circumscribed scab; as long as the poison is limited to the skin and subcutaneous connective tissue, we may hope to neutralize it by the subcutaneous injection of antiseptic solutions, which must be made in sufficient numbers in appropriate positions. If the poison has been absorbed into the blood, subcutaneous injections are no longer capable of destroying it; and M. Raimbert considers intravenous injections as too dangerous a proceeding to be adopted. (*Gazette Hebdomadaire*, 1876, No. 25.)

Selection of Anæsthetics for Dental Surgery.—M. Moreau-Marmont gives the preference to nitrous oxide gas to other anæsthetics on account of its relative freedom from danger. According to statistics collected by Darin, 53 deaths occurred in 152,260 administrations of chloroform, or 1 : 2,872; 4 in 92,815 of ether, or 1 : 23,203, and 3 in 300,000 of gas, or 1 : 100,000, one of which was due to an accident, namely, the falling of a cork into the air-passages. He attempts to give an explanation of the less danger of nitrous oxide gas, and thinks it deserving of general introduction into minor surgery. (*Gazette des Hôpitaux*, 1876, Nos. 88, 89.)

Carbolised Jute Dressing.—R. Köhler describes the mode of using this kind of dressing practised in Bardeleben's clinic. In amputation and similar operations it has been found exceedingly serviceable, and it is extremely cheap. It appears to be in common use for open wounds. If bleeding has ceased, the wound is thoroughly washed out with a three per cent. solution of carbolic acid, the surrounding soft parts being gently pressed and kneaded so that the acid may penetrate into all nooks and corners. M. Köhler states that amongst several hundred patients thus treated he has never seen any instance of pyæmia or septicæmia. Erysipelas only occurred once in a patient after the removal of the præpatellar bursa, but she was in a very impaired state of health. Recovery after one or two dressings had been applied was common. Experiments were made with salicylicised jute and carbolised jute. The patients preferred the latter. (*Deutsche med. Wochenschrift*, 1876, Nos. 21, 23.)

Action of Salicylic Acid.—Riess and Stricker give the results of their experiments on the effects of salicylic acid in rheumatic affections. Riess arrives at the conclusion that salicylic acid is an excellent anti-pyretic in acute articular rheumatism, and that the fall of temperature which follows its administration is associated with a diminution of the articular affection, and that it materially shortens its duration. In phthisical patients, however, he has occasionally observed symptoms of collapse follow its use. He seems to have prescribed the remedy in full doses, and in the form of salicylate of soda. Thus he orders acid salicyl. 6 parts, aq. distill. 20, succ. liquor, 5. Stricker, on the other hand, prefers salicylic acid in the free state. He continues its use also for some time after recovery, believing that it materially aids in preventing a relapse. (*Berlin klin. Wochensch.* 1876, Nos. 7, 8.)

Rabies treated by Intravenous Injections of Chloral.—M. Prévost reported to the Société de Biologie at the meeting held June 3, 1876, a case in which this proceeding was successfully adopted. The patient was a woman, aged sixty-five, who had been bitten forty days previously on the little finger by a mad cat. As soon as the first symptoms were recognised an injection of about a third of a grain of morphia produced no effect, nor was any benefit derived from the inhalation of chloroform. In fact, the patient was rendered rather worse, symptoms of suffocation supervening. Sixty grains of chloral in an aqueous solution (containing one part to ten) was then injected into the saphena vein, and within three minutes the patient was in a deep sleep and completely anæsthetic. The spastic contractions recurred in the course of twenty minutes, when ninety grains were injected in the same way. In the course of the next seventeen hours, one hundred grains more were injected, which produced tranquil and continuous sleep for many hours and subsequent recovery. (*Société de Biologie*, June 3, 1876.)

Rabies treated by Oxygen.—MM. Schmidt and Lebedew, physicians practising in Russia, record the case of a girl, aged twelve, who was bitten on the 7th January, 1876, in the hand by a mad dog. The wound penetrated to the subcutaneous connective tissue, but there was scarcely any bleeding. Nitrate of silver stick was applied directly, and complete healing occurred in a week. The child, however, who had only recently (three months previously) been attacked by diphtheria, followed by paralytic aphonia, became irritable. On the seventeenth day dyspnœa suddenly appeared, the inspiration being free, but the expiration laboured; dysphagia, rapid pulse, contraction of the fingers; no evacuation either from the bowels or bladder. Three cubic feet of oxygen were now ordered to be inhaled, with immediate advantage; and in two hours and a half she was perfectly well. A day or two after a relapse occurred, with tonic convulsions of the back and extremities, spasm of the respiratory muscles, and complete loss of consciousness, which again were all entirely removed by inhalation of oxygen for forty-five minutes. Slight dyspnœa was experienced for ten days, for which monobromide of camphor was ordered, and its use continued for three weeks. In the early part of February she suffered from paresis of the nerves of both legs, but after that, with the exception of the aphonia, she remained in perfect health. (*Centralblatt f. d. med. Wiss.* No. 32, 1876.)

Cause of Hooping-Cough.—M. Guéneau de Mussy has constantly found enlargement of the mediastinal glands and compression of the recurrent laryngeal nerves in children that have died of hooping-cough. He has also noticed that the nerves were more or less compressed in cases of glandular enlargement from other causes where cough had been present. He regards the compression of the nerves and consequent irritation as the cause of the cough, and considers hooping-cough to be an eruptive fever, in which the eruption is internal. Its stages are—local lesion of the pulmonary mucous membrane, enlargement of the peribronchial glands, compression of the recurrents, and cough. A greater amount of damage to the nerves will cause paralysis of the glottis, and explain the continuance of hooping-cough for months or years, and also the aphonia due to paralysis of the larynx, which is often observed when hooping-cough is passing off. (*Le Progrès Méd.* January 13.)

Iodine Injections in Ascites.—Dr. Ford records two cases of ascites in which a complete cure was effected by the injection of two fluid ounces of tincture of iodine diluted with equal parts of water into the abdominal cavity after tapping. In one case the ascites seemed to depend on disease of the kidneys due to a fall on the lumbar region. In the other, the ascites followed the cessation of the catamenia. (*Canada Lancet*, Feb. 1.)

Action of Faradaic Currents in Cutaneous Anæsthesia.—M. Bourceret gives a series of cases of muscular atrophy both with and without cutaneous anæsthesia, that have lately occurred in Professor Vulpian's clinique at the Hôpital de la Charité. One of these cases was a washerwoman, æt. 43, married, and had had three children. Her occupation caused her to put her hands and arms alternately into hot and cold water. In 1873 her right arm suddenly swelled, and soon after she suffered from pemphigus. A week subsequently she slept with her head resting on her left arm, and lost the sensibility and, to some extent, the motility of the hand and arm, and this had lasted for six months. The treatment, which was continued for eighteen months, consisted in the application of frictions and the administration of potassium iodide, and though the hand and arm were somewhat atrophied, she recovered sufficiently to resume her work. Five months after the right arm was observed to be insensible, and she burnt herself on several occasions without perceiving it. About this time she experienced a difficulty in swallowing and transient attacks of aphonia. She now applied to M. Vulpian for relief. The left thumb was found to be adducted, the index could not be completely extended, the other fingers were strongly flexed, the thenar and hypothenar eminences, with the anterior part of the forearm, were flattened and atrophic. There were also symptoms of atrophy of the right hand and arm, and on both sides the power of the muscles was reduced. The extremities were cold. The tactile sensibility was diminished. Iodide of potassium and electricity were ordered. M. Vulpian considered that the woman's business predisposed her to disease, that she had had a true traumatism; and diagnosed radial paralysis, due to compression, followed by degeneration of the nerve, consecutive alteration of one-half of the cord, and subsequent extension of the lesion to the opposite side of the cord: the disease was advancing upwards, as shown by the implication of the glosso-pharyngeal nerve. In applying the electricity M. Bourceret employed an induced current, one of the electrodes being terminated by a moist sponge, the other by a metallic brush. Each sitting lasted for five minutes, and only took place every other day. Great improvement, with one relapse in the course of three weeks, and though the patient was obliged to leave the hospital before the cure was complete, yet sensibility had almost completely returned to its normal condition. (*Archives de Physiologie*, No. 6, 1876.)

Aqua Puncture as a Remedy for Neuralgia.—Dr. Bartholow, in his *Practical Treatise on Materia-Medica and Therapeutics*, observes that aqua puncture is so decided in its relief of pain that some physicians contend that the anodyne effects of hypodermic injection of morphia are due to the water, and not to the opiate. The injection of water, to be efficacious, must be near the seat of pain. In facial neuralgia, sciatica, lumbo-abdominal neuralgia, lumbago, uterine colic, and irritability of the bladder, aqua puncture possesses extraordinary power. In paralysed and wasting muscles, it promotes nutrition of the muscles, and contributes to the regeneration of muscular power. Thirty to sixty minims of water should be injected at the painful points; and if no relief occurs in two minutes, repeat the remedy. (*The American Practitioner*, Nov. 1876.)

A New Method of Treating External Aneurism.—Dr. Walter Reid, R.N., gives the details of a case of popliteal aneurism which he successfully treated with Esmarch's bandage. He had already tried flexion and Carte's tourniquet, but, these means failing, he proposed to try the elastic bandage. It was passed very lightly over the tumour, and carried as high as the junction of the lower and middle thirds of the thigh. After fifty minutes, the patient having complained of severe pain above the seat of the constriction, a Carte's compressor was applied to the femoral at the pelvic brim, and the elastic tubing removed. The compression was used as a precaution to prevent the blood-current through the main artery from breaking down, and washing away the newly-formed clot, which it was expected had formed in the sac. When the compressor was raised a few minutes aftewards, no pulsation could be detected in the aneurism. The cure was complete. (*Dublin Journal of Med. Science*, Dec. 1876.)

Gangrene of the Lung Treated with Salicylic Acid.—Dr. C. W. Brown reports a case of gangrene of the lung which was treated by Dr. Draper in the Boston City Hospital with salicylic acid. The patient had been attacked with severe cough attended by copious expectoration of blood and corruption, which had a very foul odour. He then caught cold, when the cough increased in intensity, and his sputa for a few days were nearly half blood. He had sharp pain at the base of the chest on the left side. At the time of his admission into the hospital the patient's sputa amounted to about ten pints in twenty-four hours. He was very weak. Respiration 30; temperature 100°·6; pulse 90. The physical signs of gangrene of the lung were present. Ten grains of salicylic acid were prescribed three times a day. In the course of a week, improvement having taken place, manifested by the fall of the temperature to the normal point, but the cough continuing troublesome at night, a drachm of the syrup of poppies was ordered at night, and one grain of sulphate of quinine three times a day. The salicylic acid was omitted and the offensive gangrenous odour of the sputa reappeared in the course of twenty-four hours. It was consequently recommenced, ten grains being given every two hours, which soon rendered the sputa again nearly inodorous. Hæmoptysis occurred, and gallic acid was given, by which it was controlled. From this time the patient made an uninterruptedly good recovery. (*Boston Med. and Surg. Journal*, vol. xcv., No. 20.)

The Relations of Ciliary Blepharitis (or Ophthalmia Tarsi) to Ametropia.—Dr. St. John Roosa, in a paper read before the International Congress of Ophthalmology, held in New York in 1876, observed that it is a well-recognised fact that certain forms of conjunctival inflammation arise from uncorrected errors of refraction, but believed that it is not generally conceded that blepharitis ciliaris often stands in the same relation to ametropia. A series of observations that he has made have led him to the following conclusions :—1. Ametropia seems to be the condition of most eyes affected with blepharitis ciliaris. 2. When the blepharitis is associated with errors of refraction, the cure of the edges of the lids is very much facilitated by, and sometimes depends upon, correction of the ametropia. 3. Paralysis of the accommodation by the use of atropia will usually, with no other treatment, very much relieve the blepharitis that is associated with ametropia. 4. Patients suffering from blepharitis associated with ametropia will often ignore any other affection of the eyes than that of the edge of the lids, and deny that they suffer from asthenopia or conjunctivitis, complaining only of the discomfort and disfigurement produced by the disease—and this when the error of refraction is so marked that we would naturally expect quite serious consequences from its non-correction. 5. The form of blepharitis to which his statistics refer is not a mere irritation of the eyelids such as often accompanies a catarrhal conjunctivitis, but a true hyper-secretion of the hair follicles and tarsal glands, attended by the formation of crusts, ulcerated points, and hyperæmia. 6. Hypermetropia is the error of refraction most frequently associated with blepharitis ciliaris. (*The American Journal of the Medical Sciences*, January, 1877.)

Therapeutic Value of Zinc Phosphide.—M. Pierre Vigier remarks that much attention has lately been given to phosphide of zinc, on account of its value as a stimulant and tonic, and the results of experiments and clinical investigations have been recorded in numerous memoirs. Lecorché believes he has demonstrated that it is absorbed in the form of hydrogen phosphide, but Mialhe is of opinion that the decomposition takes place, not in the intestine, but after its absorption into the blood. MM. Vigier and Dr. Curie have shown that zinc phosphide is a much more certain preparation than phosphuretted oil. The former strongly recommends the zinc phosphide in nervous affections, with excessive excretion of the phosphates and defective nutrition of the brain, in spinal irritation, hysteria, and in various forms of paralysis. He observes that it is in use in Ireland as an effective remedy in scrophulosis, and that in England it has been recommended in neuralgia, in paralysis agitans, in sciatica, in collapse, in typhus, and as a tonic in chronic diseases of the nervous system. As a tonic it may be given in doses of ¼ grain per diem ; and as a stimulant, in somewhat larger quantities for a few days. When thus given it improves the appetite, accelerates the pulse, excites the nerves, and augments the urinary secretion. If the sexual functions are excited, the dose has been too large. (*Bulletin Générale de Med.* 24, 45.)

Mode of Action of Potassium Iodide.—Dr. Kämmerer explains the medicinal action of this salt by referring to its decomposition by the action of ozonised oxygen and by carbonic acid gas. In solutions of potassium iodide, ozone causes separation of free iodine ; and when in dilute aqueous solution the pressure of carbonic acid gas breaks up the salt into hydrogen iodide (hydriodic acid) and potassium bicarbonate, but the free hydriodic acid is readily decomposed by free oxygen even when not ozonised into iodine and water. Now iodide of potassium, when introduced into the stomach, is absorbed directly into the blood. Here it meets with a large quantity of carbonic acid gas at a high pressure, and is decomposed into hydriodic acid and potassium bicarbonate, and the former is then immediately split up by the oxygen in the blood into free iodine and water. And even if the decomposition of the iodide by the carbonic acid does not take place, the oxygen in the blood, which closely resembles ozone in its properties, is capable of setting the iodine free. This free iodine does not act upon the inorganic constituents of the blood, since, on the one hand, the bicarbonates are not decomposed by it, and, on the other, between potassium phosphate and iodine a reaction may take place, leading to the formation of an inferior oxide of iodine (subiodic acid), which last is reducible with extreme facility, and consequently effects rapid combustion of organic material, free iodine being at the same time set free, which again becomes converted into hydriodic acid, to undergo the same series of changes. The action of iodide of potassium in augmenting the temperature of the blood and causing emaciation, Dr. Kämmerer considers to be fully explained by the action of the drug in increasing the combustive operations in the blood. (*Med. Chir. Rundschau*, Jan. 1877.)

Toxic Action of Glycerine.—M. Dujardin-Beaumetz and Audijé found that chemically pure glycerine, injected subcutaneously in divided doses to the amount of 8 grammes (ʒii.) in the course of twenty-four hours into dogs proved fatal. The phenomena presented, which they term "glycerismus," are loud cries, restlessness, followed in the course of a few hours by dulness, hæmatemesis, hæmaturia, depression of temperature, difficulty in walking, somnolence, and diminution of the beats of the pulse and the movements of respiration. Section of such animals showed that the liver was hyperæmic, that there were hæmorrhages in the intestinal mucous membrane and in the kidneys, and that the blood was black and the heart dilated. The authors point out that the results of their experiments indicate the necessity of care in the treatment of diabetes with glycerine. (*Med. Chir. Rundschau*, Jan. 1877.)

Physiological Action of Sanguinarina.—Dr. R. Meade Smith, of Philadelphia, has drawn the following conclusions of the physiological action of sanguinarina, from 153 experiments made with this alkaloid on cats, dogs, rabbits, frogs, guinea-pigs, pigeons, &c. 1. Sanguinarina destroys life through paralysis of the respiratory centre. 2. It causes clonic convulsions of spinal origin. 3. It has no other effect on either the motor or sensory nerves. 4. It causes marked adynamia and prostration from its depressing action on the spinal ganglia and muscles. 5. It decreases reflex excitability through irritation of Setschenow's centre, and by ultimate paralysis of the spinal ganglia, in large doses. 6. It produces in cats, dogs, and rabbits a fall of pulse and blood pressure, the fall of the latter being preceded by a temporary rise after the administration of proportionally small doses. 7. The fall of blood tension is caused by a paralysis of the vaso-motor centre, and by paralysis of the heart itself, probably of its muscular structure. 8. The temporary rise in blood pressure is due to irritation of the vaso-motor centre, previous to its paralysis by small doses. 9. The reduction in the pulse is due to direct action of the poison on the heart, through paralysis of its motor power. 10. Sanguinarina has no action on the liver. 11. It causes marked salivation. 12. It slows the respiratory movement by prolonging the pause after expiration. 13. This reduction is caused by loss of tonus of the respiratory centre. 14. Small doses cause an irritation of the respiratory centre, and consequently an increase in the number of respiratory movements. 15. Applied locally, sanguinarina soon causes complete paralysis of striped muscular fibre. 16. It always causes dilatation of the pupil. 17. It is an emetic. 18. It always lowers the temperature. 19. When introduced into the circulation it diminishes muscular contractibility. (*The American Journal of the Med. Sciences*, Oct. 1876.)

Diagnosis of Aneurisms of the Aorta by the Laryngoscope.—At the Medical Congress held in the autumn of last year at Turin, Dr. Zawerthal, after detailing the various symptoms that accompany aortic manifestation, and dwelling on their little diagnostic value, called the attention of the meeting to the deductions that can be made in such cases from an inspection of the upper part of the respiratory passages by the aid of the laryngoscope. One of these signs, long known, consists in the paralysis of one or both vocal cords, consequent on pressure applied to the recurrent nerve, the other, recently discovered by Schrötter, and investigated by Zawerthal, consists in a rhythmical introflexion of the upper part of the trachea, readily perceptible under the laryngoscope. Thė reading of the paper gave rise to a very animated discussion. (*Archives de Médecin,* Jan. 1877.)

Antihydropin.—Bogomolow has tried the effects in dropsical effusions of a domestic remedy much employed in Russia, namely, the Blatta orientalis, or cockroach, giving it to nine hospital patients. The patients were for the most part suffering from diffuse nephritis with vascular troubles, and were all highly dropsical. The beetles were administered in the form of powder, five to ten grains being given per diem in the form of tincture, forty drops being given, and in the form of beetle tea. The action was always similar; the renal secretion and perspiration increased, the dropsy rapidly disappeared, as did also albumen and morphological elements. The powder did not exert any stimulating action on the renal apparatus. Bogomolow obtained the active principle in a crystalline form, and has given it the name of antihydropin. (*Petersburg Med. Wochenschrift,* No. 31, 1876.)

Treatment of Diphtheritis. — Tenholt recommends a mixture of salicylic acid and lime-water, containing two parts of the former to two hundred of the latter, in the treatment of diphtheria. The solution may be applied with a brush, or as a gargle. In children, or where great difficulty is experienced in applying it, half a teaspoonful may be given with a little milk every half-hour as a drink. Averbeck recommends that the patient should be well nourished, that no attempts should be made to remove the diphtheritic slough, since every wound effects a new inoculation, and every half-hour blows into the throat some flores sulphuris non depuratæ, with the addition of salicylic acid. If the swelling is great, and the insufflation cannot be accomplished, he applies warm water dressings, on Priessnitz's plan, to the neck, washes the mucous membrane with carbonic acid or salicylic acid and water, and administers quinine internally. (*Allg. Med. Central. Zeit.* 1876, p. 397, and *Wiener med. Wochens.* No. 38, 1876.)

Intra-buccal Elastic Ligature for the Removal of Lingual Tumours.—Dr. E. Delens refers to the frequency of epithelioma of the tongue, and the liability there is to hæmorrhage when the tumour is removed by the knife, which can only be restrained by the application of the actual cautery. He considers that neither the ecraseur nor the galvano-caustic method quite come up to the expectations that were formed of them, serious hæmorrhage having not unfrequently followed their employment. Billroth's plan of making a section through the skin, parallel to the border of the lower jaw, into the cavity of the mouth through which the tongue is drawn, he considers to be quite unpractical, since of nine cases thus treated Billroth lost four. Dr. Delens suggests instead that an elastic ligature should be passed round a part or the whole of the tongue, the thread being tightly drawn from the very first. It offers the advantages, he maintains, of absence of hæmorrhage and of the occurrence of consecutive glossitis ; the swelling of the distal part of the tongue is in fact very slight. Moreover the pain, which is undoubtedly acute at first, rapidly subsides, and, if the ligature have been drawn tight enough, disappears in the course of a few hours. The mode in which the final knot is made is of importance, and he describes a special manœuvre, the ends being passed through the substance of the tongue, by which any slipping is prevented. He prefers an elastic thread having a diameter of 2½ to 3 millimeters. When properly applied ulceration quickly commences, and the constricted portion sloughs off in the course of the tenth day. The mouth requires to be frequently washed out with solutions of chlorate of potash, which has remarkable power in deodorising putrifying fluids. Alimentation, sometimes difficult, must be carefully attended to ; speech should be interdicted ; cicatrisation takes place readily. (*Archives de Médecine,* Jan. 1877.)

Treatment of Otorrhœa.—In a *resumé* of recent progress in otology, by Dr. J. Orme Green, he observes that Paulsen claims to have met with excellent results in the treatment of otorrhœa, uncomplicated with caries or large polypi, by means of a mixture of carbolic acid and olive oil, in the proportion of one part of the former to ten of the latter. He has found it much more effective than astringents or other methods which he has tried, and the combination of the acid with the oil was much better than the acid with water. His method of application is to cleanse the ear thoroughly by cotton or a probe, avoiding syringing unless absolutely necessary, and then, dipping a tampon of cotton in the solution, to apply it to the secreting surface, and there leave it till the next day, when the same process should be repeated. In this way he has succeeded in relieving obstinate otorrhœa, even when complicated with small granulations. Politzer gives the results of his experience with caustic solutions of nitrate of silver, and recommends the employment of one part of the salt to ten or eight of water. All secretion should first be removed from the middle ear by inflation, either with the Politzer bag or the catheter, and the meatus should then be thoroughly syringed out; the meatus must then be carefully dried by pledgets of lint or cotton, in order that the solution may come into contact with the diseased mucous membrane. For cauterising the middle ear, from ten to fifteen drops of the solution should be poured into the ear, with the head inclined in the opposite direction; if the membrana tympani be largely perforated the fluid readily enters the middle ear, but if the perforation be small, it is necessary to inflate the tympanum; the pain is slight. Schwartze combines with strong solutions of nitrate of silver the use of powdered alum. (*Boston Med. and Surg. Journal*, vol. xcv., No. 20.)

Means of Arresting Epileptic Attacks.—M. Nothnagel gives the case of a workman subject to attacks of epilepsy, in whom each fit was preceded by an aura, occurring usually from a quarter of an hour to half an hour before the fit. The aura was characterised by a peculiar sensation of constriction, the seat and point of departure of which was the epigastrium. The sensation seemed to rise in the throat, and to compel the patient to breathe deeply and rapidly. Then it seemed to descend, and after recurring several times, finally affected the head, which was turned to the right, when the patient immediately became insensible. He had discovered for himself that on putting a quantity of salt into his mouth, as soon as the aura commenced, he could ward off the attack; a sensation of burning was experienced in the œsophagus, and the affection re-descended; a teaspoonful was insufficient; a handful was required. Brown-Séquard arrested, it is well known, attacks of epilepsy in his epileptic Guinea pigs by turning their heads briskly to the side of the body opposite to that of the medullary lesion; and it would appear that a strong peripheric stimulus will serve the same purpose, as sharp pinching of the skin in the epileptic zone or elsewhere, or the application of a tight ligature to the fingers. In such cases the effect is probably due to a simple reflex inhibitory influence. Prof. L. Meyer, remarking on these cases, states that several years ago, in fact as long ago as 1855, Prof. Nothnagel observed that sulphate of quinine administered a certain time before an epileptic attack was very effective in preventing its occurrence, and in these days, when intravenous or subcutaneous injection can be so readily employed, this means would appear to be worthy of further investigation. The quantity administered by Prof. Nothnagel was from fifteen to forty-five grains. (*Berlin klin. Wochenschrift*, Nos. 41 and 46, 1876.)

Nitrate of Silver in Amaurosis.—The *Journal de Médecin Veterinarie Militaire* has published two cases, by M. Renoux, of the cure of complete and simple amaurosis by the employment of a pommade of silver nitrate. In the first case the amaurosis was complete and double, and occurred suddenly in a horse of the 3rd Chasseurs ; in the other case the amaurosis was single. In the former case the treatment consisted in applying to the eyes an ointment containing one-thirtieth of the nitrate, in the introduction of two setons on each side of the eyes at the upper part of the cheeks; a favourable result ensued in the course of three months, and at the end of the fourth month the amaurosis had entirely disappeared. There was no relapse. The second case was cured in one month. The cause of the disease could not in either case be ascertained. (*Archives de Médecin*, Feb. 1877.)

Injections of Carbolic Acid for Neuralgia.—Dr. Merten, of Neuwedell, reports four cases of severe neuralgia that were cured with surprising rapidity by one or two hypodermic injections of carbolic acid. In the first case, the patient, a hysterical young woman, had suffered for several months from strabismus and ptosis of the left eye, with diminution of the field of vision in the same eye by almost one-half. Ophthalmoscopic examination gave negative results. She was suddenly seized with intense neuralgia of the left malar nerve, for which twenty drops of a 2 per cent. solution of carbolic acid was injected over the cheekbone. It caused at first intense burning pain, with redness and swelling at the point of injection, but one hour later all pain had entirely disappeared. On the next morning there was no pain at all, the ptosis and strabismus had entirely disappeared, and the field of vision of the left eye had markedly increased. Unfortunately, the patient did not again present herself for observation. The second case was one of acute oöphoritis, with severe neuralgia of the external cutaneous nerve of the thigh, and intense pain about the anus on defecation. Two injections of a syringeful of the 2 per cent. acid solution permanently relieved all the pains. The third case was one of suppressio mensium and sciatica. Two hours after the injection of a syringeful of the above solution the pain ceased entirely and did not return. Menstruation was subsequently regular. The last case was one of myalgia of the right side of the neck consequent on exposure to cold. A single injection of the 2 per cent. solution produced a cure. (*Allgem. Med. Cent. Zeit.*, Sept. 6, 1876.)

Notes and Queries.

LARGER DOSES OF CHLORAL IN CHOREA.—Dr. Farquharson writes:—In connection with the very interesting paper by Dr. Bridges on the administration of chloral hydrate in chorea, I should like to remind your readers of the remarkable case published by Professor Gairdner in the *Glasgow Medical Journal* for 1870. A little girl, aged eight, came under treatment for chorea in a peculiarly aggravated form. Zinc, arsenic, and calabar bean were tried in vain, and small doses of chloral gave very partial relief; but one night the nurse in attendance administered, by mistake, forty-five grains of the latter drug. Most alarming symptoms ensued, and great depression of the heart's action, with extreme nervous prostration, placed the life of the little patient in extreme jeopardy for some hours. Immediate improvement, however, in the choraic symptoms was observed, and in the course of another day the satisfactory result of a complete and permanent cure was fully obtained. Do not such cases as these give another heavy blow to the already shattered embolic theory?

TREATMENT OF POST-PARTUM HÆMORRHAGE.—In reference to Dr. Handsel Griffith's paper on this subject, in the last number of the *Practitioner*, Dr. Clement Godson sends us the following extract from a letter of his, which appeared in the *British Medical Journal* for Dec. 11th, 1869. "There is one other remedy to which I am anxious to call attention, because I have seen it prove useful on many occasions, and I believe it to be very rarely had recourse to. It is the application of the ether spray to the surface of the abdomen. I have constantly applied it and with the best results; not long since, in a case when the placenta was retained from the atonic condition of the uterus, immediately upon the application of the spray it was discharged abruptly, and all hæmorrhage ceased. Independent of its being the most rapid and efficacious means of applying cold, it avoids all the disturbance produced by the wet, consequent on the application of water. In illustration of the remarkable power which it exerts in causing contraction of the uterus, I may quote a passage from Dr. Greenhalgh's pamphlet on 'Cæsarean Section,' case 9, page 8. 'Dr. B. W. Richardson, with the assistance of Dr. Sedgwick, having rendered the parts about to be incised insensible by the ether spray, the operation was performed in the usual way . . . . It is worthy of remark that, under the influence of the ether spray, the uterus contracted so firmly as for a short time to impede the introduction of the hand into its cavity. Although the placenta was beneath the incision, scarcely three ounces of blood were lost. So important an agent is it deemed, that the apparatus is included among the components of the "Obstetric Bag," manufactured by Messrs. Arnold.' "

Bibliography.

Infant Feeding, and its Influence on Life. Third Edition. By Charles H. F. Routh, M.D. Fcap. 8vo. pp. 540. 7*s.* 6*d.* London: Churchill.

Clinical Studies. Illustrated by Cases observed in Hospital and Private Practice. By Sir J. Rose Cormack, M.D. Post 8vo. 2 Vols. pp. 1,127. 20*s.* London: Churchill.

Outlines of Practical Histology. Second Edition. By William Rutherford, M.D. Crown 8vo. pp. 194. 6*s.* London: Churchill.

Nutrition in Health and Disease. Second Edition. By Henry Bennet, M.D. 8vo. pp. 248. 7*s.* London: Churchill.

Healthy Skin: a Popular Treatise on the Skin and Hair, their Preservation and Management. Eighth Edition. By Erasmus Wilson, F.R.C.S., F.R.S. Fcap. 8vo. pp. 330. 2*s.* 6*d.* London: Churchill.

A Manual of Dental Mechanics. Second Edition. By Oakley Coles, L.D.S.R.C.S. Crown 8vo. pp. 288. 7*s.* 6*d.* London: Churchill

A Course of Quantitative Chemical Analysis. Fourth Edition. By William G. Valentin, F.C.S. 8vo. pp. 264. 7*s.* 6*d.* London: Churchill.

The Anatomical Remembrancer, or Complete Pocket Anatomist. Eighth Edition. 32mo. pp. 297. 3*s.* 6*d.* London: Churchill.

Lectures on the Physical Diagnosis of Diseases of the Heart. Second Edition. By Arthur E. Sansom, M.D. Fcap. 8vo. pp. 192. 4*s.* 6*d.* London: Churchill.

A Handbook of Therapeutics. Fifth Edition. By S. Ringer, M.D. 8vo. pp. 597. 12*s.* 6*d.* London: H. K. Lewis.

A Practical Treatise on Diseases of the Urinary Organs. Third Edition. By S. Gross, M.D. 8vo. pp. 574. 170 Engravings. 18*s.* London: H. K. Lewis.

⁂ Any of the foreign works may be procured on application to Messrs. DULAU, of Soho Square, W.C.; WILLIAMS and NORGATE, of Henrietta Street, Covent Garden, W.C.; or BAILLIÈRE, of King William Street, Charing Cross.

Department of Public Health.

THE ART OF MAKING HOSPITALS UNHEALTHY.[1]

There is an aspect of hospital hygiene which as yet has been passed unheeded, but which well deserves serious consideration. The writer's attention was first directed to it in the course of a late vacation tour in this country, when, unable to cast aside as he ought to have done professional proclivities, he rambled into every hospital which came in his way, and so made acquaintance with not a few of the principal general hospitals south of the Tweed. Some were brand-new, some were venerable from age, and others were a curious mixture of new and old, but there was not one which did not furnish him with some hint or novel bit of knowledge to be noted for after use. As, however, he went along from place to place, hospital following hospital, and gossip with their respective medical, surgical, and administrative staffs gossip, he began to be conscious of a slowly increasing bewilderment as to certain matters which had come under his observation. He became involved, as it were, in a paradox, which presently took possession of his mind to the exclusion of mere vacation notions, and which he felt bound to attempt to solve. At first he was suspicious, having regard to the hospitality which had commonly attended his gossips, that his bewilderment was due more to gout than to the paradox which had laid hold of him. But this suspicion proved unjust, alike to himself and his hosts. The paradox was a fact, the bewilderment was the necessary accompaniment of the unsuccess which attended the early attempts to explain it. But once the explanation seized, the paradox vanished, a new aspect of hospital hygiene presented itself to the mind, and it became clear that circumstances which had previously been regarded by the writer as reflecting infinite discredit upon his profession were susceptible of a widely different interpretation. He would plead in extenuation of his first erroneous conclusions a training in what he is now prepared to recognise as a narrow-minded school of hygiene which dogmatically condemns preventable sickness, regarding it as a blot on civilization. Hence, when in the course of his tour, he found that, for example, surgical unhealthiness of hospitals, even of the newest, was the rule rather than the exception, he hastily came to the conclusion that the hospital administration must be at fault, and that the medical and surgical staff must, in the main, be responsible for this. But he presently found, as gossip succeeded gossip, that this conclusion was irreconcilable with the fact that his brethren were at one with him in their hygienic fath. Here was the paradox which bewildered him. The results observed in hospital practice were utterly at variance with the hygienic principles under which they were apparently brought about. To have suspected that any neglect of these principles, in the sense of heedless or wilful omission or indifference, could have happened would have been to insult recklessly a body of men to which it is the pride of the writer to belong. He instinctively shrank from such a suspicion, and began to doubt the accuracy of his own observations. While in this state of doubt it was his good fortune to have brought under his observation the reports noted at the beginning of this article, and to meet also with the commissioners who had been sent to Europe by the trustees of the Johns Hopkins Hospital, Baltimore, for the purpose of studying hospital arrangements on the Continent and in this country, namely, Dr. John S. Billings, of the United States Army, and Dr. E. M. Hunt, of New York, the Vice-President of the American Public Health Association. This meeting and the several reports referred to yielded information confirming the writer's observations, and rendered it a moral duty for him to endeavour to obviate a misapprehension on the subject under consideration too likely to occur.

---

[1] Hospital Plans :—Five Essays relating to the Construction, Organisation, and Management of Hospitals. Contributed by their Authors for the use of the Johns Hopkins Hospital, of Baltimore. New York, 1875.

Report to the Local Government Board on the Sanitary Condition of the Royal Infirmary, Manchester. By Mr. Netten Radcliffe.

Three Reports on the Sanitary Condition of St. Mary's Hospital, London. By Surgeon-Major F. de Chaumont, M.D., Professor of Hygiène, Army Medical School, 1876-1877.

Dr. Billings and Dr. Hunt had been over much of the ground that the writer had been. They had, however, been over other ground where he had not been, and he had thus the opportunity of comparing his limited experience with their larger knowledge. Let it be stated, first, that the Johns Hopkins Hospital, which these gentlemen represented, is not as yet a thing of stone or bricks and mortar. It is still in the stage of the designer and the draftsman. When completed it will be among American hospitals what Guy's Hospital is among English hospitals. Its munificent founder, a citizen of Baltimore, lately deceased, has provided that this hospital, which will eventually contain 400 beds, shall have attached to it a convalescent establishment and a training school for nurses, and shall be the means of clinical teaching associated with the medical school of the Johns Hopkins University (another creation of the same munificent founder). The trustees appointed to carry out this noble project judiciously began their work by asking for reports on hospital construction and organisation, with suggestions for the plan of the Johns Hopkins Hospital, from five selected physicians in the United States, who had given special attention to the subject of hospitals, namely, Dr. John S. Billings, Dr. Norton Folsom, Dr. Joseph Jones, Dr. Caspar Morris, and Dr. Stephen Smith. The reports of these several gentlemen have been printed and published in the volume which has been referred to, and they form a most instructive and valuable addition to the literature of hospital construction and management. Subsequently the architect selected by the trustees, Mr. Niernsee, was instructed to prepare plans, embodying what seemed desirable of the various suggestions, Dr. Billings aiding the trustees with his advice on the details. Afterwards, in order that nothing might be wanted which should make the hospital as complete as practicable, Dr. Billings, accompanied by Dr. Hunt, was sent to Europe to study hospital arrangements on the Continent and in this island.

The Johns Hopkins Hospital Reports are all characterised by an implicit belief that the essential principles of hospital construction and organisation are now well understood, and that in particular cases the adaptation of these principles is chiefly in question. The commissioners had obviously come to this country, first, with a view of making pilgrimage to the shrines of St. Philomela, and of the uncanonised John Simon and Douglas Galton; and next, to study with loving care the practical results, especially as seen in our numerous new hospitals, of the instruction of these venerated teachers. Strange to say, the commissioners, as it proved, were not less bewildered than the writer with discovering that in practice where these principles had ostensibly been fully carried out, and certainly where, as to structural matters, they had been religiously observed, there was a strange incongruity between their application and the results which seemingly flowed from them. Indeed, if the commissioners were to trust their observation, and to take surgical unhealthiness of wards as a criterion, such unhealthiness appeared too commonly to exist in these buildings, notwithstanding St. Philomelism, John Simonism, and Galtonism.

Mr. Netten Radcliffe's report on the Royal Infirmary, Manchester, is a curious production, tending to a similar conclusion. The governing body of that institution, on what grounds is not very clearly explained, applied to the Local Government Board, asking that one of its medical officers might be instructed to make an inquiry into the sanitary condition of the hospital. Mr. Radcliffe was instructed to carry out the investigation, and its results are given in this report. The Royal Infirmary, Manchester, is an old, badly-constructed building, of 250 beds or thereabout, the only general hospital in that great city. It has a notable staff of physicians and surgeons, and is the clinical hospital of an important medical school, which forms part of that young giant among collegiate institutions, Owens' College. Nevertheless, notwithstanding an affluence of highly-skilled officers attached to the building, Mr. Radcliffe describes an insanitary state of things in the hospital which would have been exceptional, we should hope, before even Philomela was canonised, Simon put pen to paper on the subject, or Galton drew a plan. The details of this report will have to be referred to again; it is sufficient for the writer here to note the perplexing inconsistency between the actual condition of this hospital, the status of its professional staff, and the now familiar teachings which are accepted on hospital hygiene.

Dr. de Chaumont's reports on the sanitary condition of the Metropolitan Hospital of St. Mary, although not covering so wide a ground as Mr. Radcliffe's report, raises also the question which has perplexed the present writer.

Now Dr. Billings (see his report in the Johns Hopkins Hospital Series) and Mr. Netten Radcliffe both suggest a like explanation of the paradox which is the subject of this article, namely, results of hospital practice apparently inconsistent with the conditions under which they had happened. The explanation is of the same sort as that which occurred to the writer when first he gave attention to the subject, but is more fully set forth. In effect they state there is nothing wanting, as a rule, in the several hygienic elements which enter into the constitution of a new hospital, or the conceptions of the several hygienic requirements which are needed for an old hospital, but intelligence. The newest buildings, even when designed by Galton himself, are not self-purifying, and have not the capacity of self-adaptability to all sorts of cases under all sorts of conditions. The best system of nursing, even though it may have been planned by a St. Philomela, is a futility if it is not in definite relationship with the necessities of the medical, surgical, and hygienic requirements of the wards. Administration is a mere sham hygienically when the patients of the several physicians and surgeons form mere independent congeries of cases under the same roof, which are held to have nothing in common but shelter, kitchen, and dispensary, and of whom the general health-condition and needs, in relation to their immediate surroundings, and as a body of persons brought together under very special circumstances are ignored, except when notice is compelled by fatal outbreaks of traumatic infections. In brief, the hygienic elements of hospital management lack, they affirm or imply, intelligent co-ordination, and hence necessary failure, although the several independent elements may have been most religiously cared for.

There is, no doubt, a certain plausibility in this view of the case, but a little consideration will convince others, as it has convinced the writer, that it cannot be sustained, or, at least, ought not to be admitted. And, first, the view implies that our hospital staffs are either indifferent to the hygienic administration of the noble institutions to which they are attached, or that they entertain exceedingly crude notions of such administration—an assumption audaciously extravagant, and wholly inconsistent with their professional status and recognised abilities. If the new St. Thomas's Hospital, notwithstanding its permeation with the influence of St. Philomela, the pure Galtonism of its structural arrangement, and a Simon on its surgical staff, is more unwholesome than the Surrey Music-hall, in which the Charity was for some time housed, and where the beds were perforce arranged in several tiers deep, is it to be inferred that there can be any error in the hygienic administration of the building? Surely not; for it can hardly be necessary to look beyond the occult mischievousness of a new building to explain the traumatic infections which have infested it, especially erysipelas! The new hospitals in Leeds, in Swansea, in Cambridge (Addenbrooke), &c., all Galtonic, have had, or have, their plague of erysipelas. Clearly, if defective hygienic administration were to be suggested of one, it must be suggested of all; and is this permissible in view of the respective staffs? But, secondly, the paradox admits of another and more intelligible explanation, an explanation in complete accordance with the facts, and which does not, as that we have just noticed (we regret to say), derogate from the profession. On this latter subject, however, we simply touch in passing. The writer has sufficient personal knowledge of Dr. Billings and Mr. Netten Radcliffe to know that their regrets for an erroneous conclusion, reflecting, as it would seem, at least indirectly, on their profession, will need no prompting when they understand how the case really stands. This the writer now proceeds to show.

It may be taken for granted that south of the Tweed there is no essential difference of opinion among persons competent to judge on the subject as to the essentials of hospital hygiene. This being accepted, and the writer having rejected the theory of indifference or negligence, or unintelligence as an explanation of the results which have perplexed him, the problem arises, how it becomes possible to educe from a sufficient knowledge consequences which have hitherto been set down as the results of ignorance. The solution of this problem gives the clue to the paradox. The moment the mind emancipates itself from the dogmatic, didactic tone which has become attached to the indoctrination of lessons of hospital hygiene, it can see the facts in their true bearing. A very few illustrations, happily (having regard to the space at the writer's disposal), will suffice to prove this. The view-point being changed, as above indicated, and knowing what we do of hospital construction and management, no small ingenuity must be exercised, consciously or unconsciously, to build and administer new hospitals, so that they should, from the time of, or shortly after, their opening, become infested with erysipelas and other traumatic infections. Less obviously, perhaps, but not less certainly, it may be concluded that great ingenuity, in the present state of our knowledge, is needed to make old hospitals nests of surgical and other unhealthiness. Think, for example, of the cleverness involved (as Mr. Radcliffe relates, of the Royal Infirmary, Manchester) of forgetting where the drains of a hospital lay, and of not knowing their outlet, of carrying soil-pipes through water-cisterns, and water-pipes through drains; of using a convalescent hospital so admirably in weeding out patients, convalescent or suffering from slight ailments or injury, from the general hospital, as to produce a state of surgical overcrowding in the wards, such as to be quite experimental in its nature and results; and, finally, of "isolating" cases of surgical erysipelas in wards intermediate between the medical and surgical wards, and opening from the same communicating corridor, so as to convey the disease to the medical side, while not relieving the danger on the surgical side. Admire the arrangements of the "Accident Ward" in St. Mary's Hospital to a very late date, as described by Dr. de Chaumont, and the state of the atmosphere there, laden with epithelium and pus cells, as given and depicted by that gentleman, and by Dr. J. D. Macdonald, R.N., F.R.S. In fact, in all the illustrations of hospital unhealthiness which have recently come under the writer's notice, they have arisen from such apparent disregard of accepted principles of hospital hygiene as can only be characterised and understood as skilful, and which has at times approached to genius. Aforetime the neglect of hospital hygiene was a mere matter of ignorance, now it can only be properly understood when regarded as a matter of ingenuity, in other words, as an *art*. This the writer thinks is the true explanation of the paradox which had perplexed him. It reconciles the wide-spread knowledge of the principles of hospital hygiene, which he found to exist, with the equally wide-spread neglect of their application. There is, he believes, an art of making hospitals unhealthy, which is becoming developed among us, and which may be best studied in our newer hospitals. The unhealthiness it cultivates is not the gross thing which characterised hospital unwholesomeness aforetime. It is adapted to the more cultured habits of the present day, but it is not the less unhealthiness.[1] The present writer does not pretend to discuss the future of this art and its prospective advantages. This is a subject better fitted for the lecture-rooms of the Royal Colleges of Physicians and Surgeons. His object is simply to point out the existence of the art. But without attempting to enlarge upon it, it must be apparent that this art gives the opportunity of English history being enriched by other St. Philomelas, and of English people glorying in more than the *one* it glories in now. It must be equally apparent that it is a condition of future Simons and Galtons, and can England have too many of such sons? It must be not less clear that but for this art Lister's discoveries of antiseptic treatment, which Tyndall tells us have immortalised the age, could never have happened, and would presently become superfluous. Need the writer say more to indicate that this *art of making hospitals unhealthy* has a national and professional aspect, which can hardly fail to excite emotion?

---

[1] The writer feels that he has not expressed himself here so happily as he could have wished. He would have liked to make use of Mephistopheles' description of the smoothening influence of progressive refinement on matters at one time rude and barbaric, but he is afraid that the quotation might be deemed impertinent.

DISINFECTION.—A PRACTICAL ILLUSTRATION; WITH THE EXPERIENCES OF A MICROZYME RELATING THERETO.

[THE Fever Hospital of the Metropolitan Asylums District Board, at Homerton, has been used during the pressure of the present small-pox epidemic for small-pox, as it was during the epidemic of 1870-71. In view of the hospital being again given up for its original purpose, the reception of continued fevers, it is proposed, as soon as the last case of small-pox is removed from it, to subject it to a process of disinfection similar to that which was employed, as is believed most successfully, under like circumstances in 1871. The instructions for disinfection acted upon in the year last named, and now proposed to be carried into effect, were drawn up by Dr. Alexander Collie, then, as still, the Medical Superintendent of the hospital. These instructions have never been published, but a copy having come under our observation, we have, Dr. Collie permitting, thought it might be instructive to make them known. A critical, but nameless, reader has scribbled on the back of Dr. Collie's manuscript some reflections on the experiences of a Microzyme pursued by the processes described. These we retain.]

INSTRUCTIONS FOR THE DISINFECTION OF THE HOMERTON FEVER HOSPITAL AFTER ITS HAVING BEEN USED FOR SMALL-POX.

Wards, &c.—1. Wards, including nurses' sitting-room, scullery, bath-rooms, closets, lavatories, linen cupboards, and linen shoots, to have their windows, doors, chimneys, and ventilators completely closed, and to be emptied of all movables excepting the blinds and the windows.

2. Then burn sulphur in an atmosphere of steam for 48 hours, so as to permeate all the above-mentioned places.

3. The windows having been entirely taken out, the wards and adjoining rooms are to be exposed for fourteen days, night and day, to all kinds of weather.

4. Remove wash from ceiling and then whitewash it. Wash well down the walls. All wood-work to be thoroughly washed with soap and water, and the floors to be well scrubbed. The walls and wood-work should be washed well at least twice, the floors should be well scrubbed three times at intervals of three days. *The hoppers and ventilators should be specially looked to.*

5. Now fix the windows, new sash-lines having been supplied, and commence painting, which should consist of at least three coats.

Furniture.—1. The Venetian blinds to be taken to pieces and well washed with soap and water, dried in the open air, and repainted, new tapes and cords should be supplied.

2. Bedsteads to be taken to pieces and well washed and repainted. Sacking to be washed and dried in the open air.

3. Beds, pillows, and bolsters to be emptied, and the feathers to be washed with superheated steam at a temperature of 300°, for twenty minutes, and dried for three hours at a temperature of 250°. All the linen, ticks, blankets, counterpanes, draw sheets, shirts, chemises, night-dresses, towels, handkerchiefs, nightingales, to be steeped in fresh water for one week, the water to be three times changed. These articles are then to be boiled in different waters twice, then washed and dried in the open air, but the blankets and nightingales are to be subjected to a dry heat of 230° and not boiled.

4. Night-stools, bed-tables, chairs, bed-boards, tables, cupboards, presses, and racks to be exposed in the open air for fourteen days, then well scrubbed with soap and warm water, roughly wiped, and left to dry in the open air.

5. The seats of the night-stools and the seats of all the water-closets to be planed.

6. All sinks, sluice-pans, and closets to be flushed.

7. Crockery and medicine-bottles to be thoroughly washed in boiling water. The feeders in particular to be boiled, and the spouts cleaned out with a brush.

8. All brooms, brushes, scrubbing-brushes, knee-rests, flannels, dusters, and sponges used in the small-pox period, and any tow, lint, or cotton-wool which may have been in the wards to be destroyed ; also all mats, and oil-cloths, and carpets, in the wards or the sitting-rooms of the nurses.

9. Slop-pails and tubs to be steeped in fresh water for 24 hours, exposed to wind and rain, washed in warm water and soap, and dried in the open air, and repainted. All rags or cloths used in connection with these to be destroyed.

Clothing.—1. Men's and women's under-clothing to be steeped in fresh water for a week, twice changed, then washed and dried in the open air. It would be desirable, however, to send these things to a small-pox hospital for use, as they do not stand boiling well.

2. Boots and shoes used by small-pox patients to be sent to a small-pox hospital or destroyed.

4. So far as possible the clothing of all nurses and servants, as well as that of the officers, to be steeped in fresh water for a week, then washed, boiled, and dried in the open air. Clothing which cannot be so treated to be destroyed.

Receiving-rooms.—1. To be treated in the same way as the wards, *but new baths to be supplied.*

2. New carrying chairs to be supplied.

General.—1. All the furniture in the asylum to be cleaned in the ordinary way.

2. The rooms, and offices of officers, nurses, and servants, where paper exists, to be repapered after removal of old paper, wood-work to be washed and repainted, and in other respects cleaned in the ordinary way.

3. Carpets and curtains, beds, bedding, sheets, linen generally and blankets, and all furniture in officers' and servants' rooms to be thoroughly cleaned.

4. All rooms, passages, corridors, pantries, store-rooms, linen-rooms, stairs and staircases, water-closets, lavatories, and bath-rooms, together with the nurses' dining-room, and the mess-room to be well washed, as to the wood and stone work, and the wood-work to be repainted and white or lime-washed where such was before.

5. Mortuary and post-mortem room to be fumigated with sulphur and steam, well washed down, exposed to the atmosphere, and repainted.

Kitchen.—Well washed, exposed to the atmosphere, lime-whited, and repainted. All utensils employed there to be thoroughly cleaned.

Stewards' department.—Store-rooms and offices to be thoroughly cleaned in the ordinary way.

Matrons' department, linen and store-rooms.—Simple cleaning.

Laundry.—Simple cleaning.

Disinfecting chambers.—Simple cleaning.

Patients' clothes' room.—To be thoroughly fumigated with sulphur and steam, exposed to the air for fourteen days, well washed, and wood-work repainted.

Dust-holes.—To be cleaned, including the dust-shoots.

Roads.—Fresh gravel.

ALEXANDER COLLIE, M.D.

EXPERIENCES OF A MICROZYME PURSUED BY FOREGOING PROCESSES.

(*Added by a Critical Reader.*)

MICROZYME recognises flavour of brimstone, and having family traditions on the subject, conceals himself and his kin in some wood-work. Looking round him after recovery from half suffocation, misses some of his progeny, and has hardly time to count the survivors before he is well washed in a way disagreeable to his feelings, but survives the process, and finds himself, with loss of various friends and children, shivering in March wind and rain with no umbrella. Still he bides his time in a crack of the "hopper," and presently recognises a colony that he knew in other and (to him) better days, and finds on comparing notes that they, having made their habitation in feather beds, have been parboiled by steam and wafted more dead than alive from the feathers to the engineer, from the engineer to the laundry-maid, from her to the housemaid, thence to the deputy medical officer, and carried by him on his tour of inspection back into the wards. Separation of friendly microzyme, and wonder if shall ever see each other again. Exchange of sentiment respecting passage through system of cow. Gradual progress of surviving colonies to extinction. Pathetic results of want of pabulum, and touching remembrances of other times. Even cow-system, with its limitations, recognised as preferable. Shivering survivors determine to emigrate: condition can't be worse, may be better. Not till weeks after does our original friend hear of the success of some of his kind in a remote porter's child. Meanwhile he himself travels upon a duster to the laundry and narrowly escapes cooking, having found refuge in the sleeve of a washerwoman, whose vaccination marks he contemplates with a sense of the vanity of existence. Not until from her he has reached the gardener, and finds himself buried under some inches of gravel, does he despair. This was the last heard of him, withered, decrepit, and alone. Whether he ever got into a sewer——but why should the speculation be followed?

Moral.—Enlarge the Vivisection Act, and protect, not vertebrata only, but all living creatures.

ON DISEASES AND HYGIENE OF WORKMEN IN THE MANUFACTURE OF ARTIFICIAL FUEL FROM PIT-COAL AGGLOMERATED WITH DRY PITCH.

BY DR. A. MANOUVRIEZ,[1]
Laureate of the Academy of Medicine of Paris.

TRANSLATED, UNDER THE DIRECTION OF THE AUTHOR, BY F. J. BROWNFIELD BATEMAN.

NEARLY all the workmen at the manufactory for *agglomerated coal* at Saint-Vaast, near Valenciennes, have, even in good health, a bronzed skin, of a colour so dark and characteristic, that they can easily be recognised at first sight. Having had, in 1874, the opportunity of making a microscopical examination of the skin of one of these workmen, I have been able to decide the nature of this new kind of melanodermy, which has not yet been, to my knowledge, described by authors.

As this melanodermy is only the most evident manifestation of a *general impregnation of the system* by dry pitch, with which the artificial fuel is made, I have thought that it will be useful not to separate its study from that of the other special diseases arising from that impregnation.

---

[1] This essay, published in the *Annales d'Hygiène* (May, 1876), has unredgone a few corrections and numerous additions.

MANUFACTURES.

The Mining Company of Anzin has a manufactory of agglomerated coal at Saint-Vaast, just outside the town of Valenciennes. This artificial fuel is composed of *coal-waste and dry pitch,* the solid residue of the distillation of coal-tar, with the addition of a certain quantity of heavy mineral oil, previously treated for the extraction of anthracin. This coal-waste agglomerated with dry pitch is converted into oblong lumps, called *briquettes,* for the purpose of easy stowage, which are principally used for the fuel of steamboats and locomotives, but which are being more and more employed in domestic economy.

The idea of agglomerating pit-coal with coal-tar originated in 1821 with an Englishman, Peter Davey. Coal-tar was first used for this purpose in France in 1832 by two engineers of Saint-Etienne, Ferraund and Marsais. The latter soon gave the preference to the fluid pitch, imperfectly distilled tar, with which he manufactured *briquettes* about the year 1842. During the last twenty years, dry, or perfectly distilled, pitch has been used in Belgium, and at Anzin, Aniche, Blanzy, Portes, &c., in France. This latter mode of manufacture was first employed in England, where Wylam seems to have adopted it about the year 1843.

The pitch formed from the distillation of coal-tar (which process is effected in an adjoining building) flows, while hot, into reservoirs, where it solidifies by cooling in the open air; it is then carried away and piled up in heaps.

The workmen employed at these reservoirs are exposed to the influence of vapours arising from this material, particularly when working in the sun. The grinding of the dry pitch, an operation particularly important in reference to the subject I am considering, is carried on in a cellar; one workman throws it with a shovel into the grinder or mill, whilst another collects the fine pitch as it issues from the mill, and loads the buckets by means of which it is carried up into another compartment. From these operations there arises a thin dust so copious as to darken the cellar. The pulverised pitch thus floating in this limited space adheres to the exposed parts of the skin, to the hair, and to the beard of these workmen (called cellarmen), and even partly penetrates through their clothes. Spectacles have been tried with the view of protecting the eyes, but the vapour soon dimmed the glasses, and usually the workmen turned them up on the forehead. As the pitch is easily softened by a slight heat, and becomes almost fluid by exposure to the sun, and as in these cases there is is a high temperature, one can easily imagine the tenacity with which it adheres to the perspiring skin, and the facility with which the skin becomes impregnated under such conditions. The pitch dust enters into the ears and into the nostrils; it is even carried as far as the bronchial tubes by the breath, and into the stomach by the incessant deglutition of saliva. Each cellarman works under these conditions for eight hours daily.

The homogeneous mixture of pit-coal and pitch, whilst hot, is made into square lumps by means of a piston. These "*briquettes*" are no sooner moulded than they are stowed away in waggons by workmen called loaders, who are thus exposed to the emanations and acrid vapours which they give out during the process of cooling.

From a hygienic point of view it is evident from this description that every person employed in this manufacture is exposed to the contact of pitch in various degrees and under various forms.

Special Diseases.

Pitch, when in contact with the skin, causes melanodermy, divers cutaneous eruptions, and epithelial cancer; in the eyes and ears it gives rise to ophthalmia, amblyopia, and hemeralopia, with photophobia, to incrustations in the external auditory tube, and to external suppurative otitis. When carried into the respiratory and digestive organs it gives rise to coryza, ulcerated tubercles of the nasal fossæ, bronchitis, with or without pulmonary pseudo-melanosis, and gastro-entero-hepatic disorders.

Skin.—The skin of almost all the workmen employed in the manufacture of agglomerated coal presents a shining uniform bronzed colour, with a certain amount of induration. This melanodermy is sometimes general, but it is most marked on the face, neck, the front of the chest, the arms, forearms, and hands, in fact, on all uncovered parts. In a cellarman (Case v.), it was more marked on his bald scalp, where it assumed somewhat the appearance of a sharply-defined yellow skull-cap. This feature is less marked in the loaders than in the cellarmen, whose hands and hair also partake of the same colour, and become red (Case xi.). The skin possesses also a strong smell of pitch, and stains with a yellowish brown the linen with which it is rubbed. The tactile sensibility (as tested by the æsthesiometer), as well as the sensibility to pain, to tickling, and to temperature, remain normal.

The bronzed colour of the skin imparts to the appearance of these workmen a special stamp, which may persist for a considerable time after their employment has been discontinued, as the following case will show :—

CASE I.—*A cellarman for eight years—Phthisis from pulmonary pseudo-melanosis.—Death—Microscopical examination of the skin affected with melanodermy.*

In June, 1874, a former cellarman, at the works of Saint-Vaast, 72 years of age, died at the Hôtel-Dieu, at Valenciennes, under the care of Dr. J. Manouvriez. Having worked for upwards of eight years at pitch-grinding, he had left the factory six months when he came under observation at the end of February, 1874. Whilst at work he was seized with lancinating pains in the face and prickings in the eyes. In spite of spectacles provided by the company, the pains and momentary amblyopia, increased even by exposure to the air outside the cellar, became so great that he was obliged to leave the manufactory.

His skin presented the characteristic shining bronzed colour and induration ; the conjunctivæ were tinged with yellow ; there was a frequent cough, copious black expectoration, cavernous rhonchi, costal pains, great debility, and progressive emaciation.

On the 8th of March he left the hospital, feeling temporarily relieved, but on his return, three weeks later, the disease began to make rapid progress. During the last two months of his life costal pains became localised in the right side of the thorax, on a level with the hepatic region. These pains were increased by pressure. The liver had, nevertheless, retained its normal size, for the line of vertical dulness below the mammæ measured only ten centimeters. The spleen was small, and not painful on pressure. There was nothing in the kidneys. Phthisis from pulmonary pseudo-melanosis, caused by inhalation of pitch-dust, caused his death on June 2nd.

We were unable to perform a post-mortem examination, but portions of skin from the neck, of the platysma myoides, and of cellular tissue, were submitted to microscopical examination with the following results :—

I. *Epidermis.*—1. Between the epithelial cells were interposed some black, opaque, irregular and angular fragments of various sizes, in some instances of the same dimensions as the cells

(30 millimeters), and in other instances no larger than their nuclei (5 millimeters); other fragments were of a yellowish brown colour, transparent and irregular, of various sizes, but smaller than the black fragments. These different fragments were more numerous and bulky in the superficial than in the deep layer.

2. Inside the epithelial cells were seen, with a magnifying power of 780 diameters, some fine, transparent yellow granulations with sharply defined edges, and disposed in rows. These granulations were met with in a few only of the cells of the superficial layer of the epidermis, being found in all those of the deep layer, but were especially numerous in those of the middle layer.

II. *Derma*, normal.

III. *Subcutaneous adipose tissue.*—1. Between the adipose cells were observed some large black opaque fragments.

2. Inside the adipose cells were numerous spherical, yellow, transparent globules, large enough to be seen by a small magnifying power.

IV. No alteration was observed in the platysma muscle.

(*To be continued.*)

ERRATA.

The Editor regrets the omission, from a previous number, of the following corrections of typographical errors in Mr. Netten Radcliffe's address to the Epidemiological Society, printed in the *Practitioner* of December last. The address had to pass through the press without the advantage of the Author's corrections.

Page 465, eighth line from top, *for* "no one definite agreement," *read* "some definite agreement."

Page 467, fourth line from bottom, *for* "or quite" *read* "on quite."

Page 469, eleventh line from bottom, a semi-colon wanted after the word "observer."

Page 473, seventh line from bottom, omit word "increasing"; fourteenth line from bottom, insert full-stop after "investigation."

Page 474, fifteenth line from bottom, *for* "Servia," *read* "Persia"; thirteenth line from bottom, *for* "disease," *read* "diseases."

Page 478, tenth line from bottom, *for* "pursued after lines," *read* "pursued upon lines."

Page 479, third line from top, *for* "as I said," *read* "as I read."

THE PRACTITIONER.

MAY, 1877.

Original Communications.

ON THE USE OF WARBURG'S TINCTURE.

BY JAMES TOMPSETT, M.R.C.S. AND Q.S.A.,

Spanish Town, Jamaica.

THE interesting and valuable article by Dr. Broadbent in the *Practitioner* of February last, "On the Use of Warburg's Tincture," must have aroused the attention of tropical surgeons. After reading Professor M'Lean's account of this agent in the treatment of malarious fevers, I felt overjoyed at the idea of having at last been made acquainted with a specific for them, and at once had a supply of the medicine imported to Jamaica. I have since that time applied it in the treatment of typical cases of remittent and intermittent fevers, and can testify to its great and certain efficacy. I will give one illustration of its sure and almost immediate action in such cases, and I may here remark that I believe its action to be always *speedy*, when the tincture is effectual. The wife of a brother practitioner had suffered, during the present month, from an acute attack of remittent fever, which lasted six days with only very slight remissions. On the night of the sixth day he became alarmed at her aspect, and sent for me. I found her intensely feverish, with an anxious, restless expression, answering questions in an incoherent manner, and taking very little notice of those around her. Her tongue was red but moist, eyes much sunken, and features pinched. The pulse was 144, and very feeble. Respirations hurried. Temperature very high indeed. (Unfortunately my thermometer had been left at home.) She had taken little or no nourishment for twenty-four hours; vomiting had been present, but had ceased. Altogether the case was one that justly caused us great apprehension. I advised the immediate administration of Warburg's tincture, and *two* doses were given at an interval of three hours. The first produced a gentle sleep, very free action of the skin, and subsequently a free evacuation of the bowels. The second dose simply completed the *cure* of the fever, and when I revisited her in the morning I found her quite cheerful and free from the dangerous symptoms which were so marked twelve hours before. She informed me that the previous day was quite a blank to her, and that she had no recollection of occurrences that took place then. There was no return of fever, and she has made a good recovery. I could mention other cases of cure of malarious fevers by this wonderful medicine, bu tthe foregoing is sufficient.

There is a type of fever, however, seen in Jamaica in which its curative qualities are not so speedily evident. I speak of typho-malarial fever, confounded by some with true enteric fever, but differing very essentially from that disease in many respects. In this there is marked benefit from its use, but not to the extent observed in the case I have related. It seems to exercise its powerful influence chiefly in *uncomplicated* cases of intermittent and remittent fever. One cardinal advantage that it has over all other preparations of quinine is that it can be given, if necessary, in the hot stage of malarious fever; whereas, quinine, pure and simple, cannot then as a rule be administered with safety. I have given the tincture once in yellow fever, but the result was unsatisfactory—increasing the vomiting and general distress of the patient. Still, I shall be inclined to repeat the experiment in future cases, and especially at the onset of the fever.

ON THE TREATMENT OF CROUP.

BY JOHN J. HIGGINS, A.M., M.D.,

New York, U.S.A.

THAT croup assumes various forms, being often simply spasmodic, and at other times catarrhal, or again exudative, is fully set forth in our text-books. Yet no one on being called to a case of croup can say that it is simply spasmodic, and may not prove exudative. The most careful dissection of symptoms would neither enable one to determine nor justify such an assertion. On the contrary, the tendency to the progression of the one variety into that of the other, unless arrested by treatment, is a truth that cannot be gainsaid. Distinctions undoubtedly exist, and should be understood, but, practically, at the bedside, the forms are *frequently* insusceptible of differentiation. The croupy ring, once heard, should of itself awake in us activity, energy, and persistence in remedial measures which must not be relaxed during its continuance. The treatment consequently is that of croup, and not of one of its varieties. The indications in reference thereto may be divided into *Special* and *General*. The *Special* indications are:

1. Relief of spasm.
2. Relief to the congestion of the parts, by the promotion of their natural secretions.
3. Reduction of the inflammation by reason of which the membrane is being produced.
4. The dissolution and expulsion of such membrane.

General Indications. Under this head are embraced, the restoration of the various functions of the system and the abatement of fever—a sufficient but not sthenic support—the exhibition of diluents to encourage secretion, as also for the same purpose the respiration of a humid atmosphere,—and the rendering of the blood alkaline to counteract the tendency to the formation of fibrin.

In noticing these indications more or less seriatim the use of emetics for *the relief of spasm* may be taken first. It is not only a time-honoured practice, but is in our repertory of medicines the sheet-anchor upon which reliance is placed for the relief of croup, and especially of that form of it termed spasmodic. As in the other forms spasm is likewise present, so emesis has been universally recommended in all varieties of the disease, and is a measure never to be neglected. The effects of emetics are not only *mechanical,* but also upon the system at large—*systemic.* These latter are upon the brain and nervous system essentially depressant, a temporary impulse only being communicated during the act itself; upon the mucous system an increase of secretion; on the vascular system (the mechanical impression attendant upon the act having subsided) the decreasing of its force, and the rendering of the pulse soft and of less frequency; on the respiratory system an increase of secretion from its mucous surfaces. The dislodgment and expulsion of accumulations which result at the same time, although usually classed among the mechanical effects, are also in fact systemic, for such dislodgment is assisted by, and frequently depends upon, the increased secretion which takes place, freeing such accumulation or exudation from its intimate connection with the subjacent tissues, and allowing an expulsive effort to avail for its removal. On the absorbent system the effects are stimulant, in so far as emetics lower the force of the circulation, it being a rule that the rate of absorption is in inverse ratio to this force. On the cutaneous system there is promotion of secretion. Emesis having taken place, the skin is found to be soft and moist, and in a general state of relaxation. On the muscular system the effect is impairment of energy. Harnack[1] asserts "the destruction of the excitability of striated muscular fibre by all specific emetics." On the urinary system in general there is promotion of secretion.

---

[1] *Archiv. Exper. Path.*

The systemic effects then of emetics are upon the secretory systems an increase of functions, and upon the nervous, arterial, and muscular, the reverse. Such effects may well be termed antiphlogistic, and are those which in conjunction with their mechanical effects have led to the universal employment of emetics in croup. In opposition however to the antiphlogistic treatment of croup, Flint[1] says, "These measures (antiphlogistic) have been employed sufficiently to show that they are not successful, and if they do not do good they can hardly fail to do harm. . . . The rational objects of treatment are to prolong life until the separation of the false membrane can be effected, and to promote the process by which this is effected." For the first object, viz., the prolongation of life, he recommends "concentrated nourishment and the judicious use of alcoholic stimulants." "Emetics," he says, "are to be employed with circumspection, in order not to conflict with the first object;" and asserts, "that it is useless to give emetics for the purpose of detaching the false membrane until the exudation has been loosened by the process of suppuration." Finally, he allows that "emetics, however, are not to be entirely withheld." Again, it is taught by Dr. Fabius, of Amsterdam,[2] that "the effect desired from emetics is purely mechanical," thus ignoring the systemic effects—effects the production of which are so clearly indicated. In a disease so grave as the one under consideration surely no assistance should be lost sight of. Such exceptional views, however, weigh little in opposition to those of the mass of authors and practitioners by whom the antiphlogistic treatment, to meet the indications as previously given, is recommended, and it is undoubtedly the one in accord with the usual principles of therapeutics. Squire[3] says, "Few diseases are so dependent for their relief in the prompt and careful adaptation of a thoroughly antiphlogistic treatment at their very commencement as is true idiopathic croup. . . . The induction of vomiting in the early stages is often the most effective means of arrest, and one that must be resorted to in all stages of the disease but the last." Evanson and Maunsell[4] say, "We are prepared to recommend a strictly antiphlogistic treatment and regimen; and in truth no other plan can be relied upon throughout the disease." The unanimity of the profession as regards the use of emetics in croup does not extend however to the kind or variety made use of, nor to the frequency of their employment during its course. To be sure the importance of prompt emesis on the invasion of the disease, usually occurring during the night, justifies us in the use of various household simples, *e.g.* lamp-oil, goose-grease, &c., if by so doing any considerable delay can be avoided; yet when a matter of selection physicians differ. Of those in general use two, ipecacuanha and tartar emetic are most usual. The systemic effects of the latter are so exceedingly prostrating and depressant that it strongly militates against one of the general indications, the proper support and maintenance of the system. That it is recommended by a large proportion of the older authors, and is in general use among a large mass of practitioners, cannot be denied. Equally so can it be affirmed that the more recent tendency of medical opinion is against it. The liability of imperilling life by a remedy exhibited for its salvation is without doubt in itself a sufficient cause for the disuse of the drug. Wood[1] says, "Tartar emetic is a powerful remedy, and is especially injurious to young children, in whom it is very apt to induce collapse. It is therefore contraindicated in infancy." A case is mentioned by Clark[2] in which "a quarter of a grain caused the death of a young child in no previous danger."

---

[1] *Theory and Prac. Med.*

[2] *Jour. für Kinderkrankheiten*, 1870.

[3] Reynolds's *Sys. of Med.*

[4] *On Dis. of Children*, by Condie.

Hamilton[3] urges that "Tartar emetic should never be given to infants." Beck[4] asserts that "in children under a year old it ought never to be used;" and again, "with regard to the manner in which tartar emetic proves so dangerous to infants, it is probably more by its action as a sedative than as a local irritant." Churchill[5] remarks, "On the other hand we must not forget that with some children tartar emetic produces a very depressing effect;" and quotes Stewart as having known "utter and irrevocable prostration, and death quickly ensuing from its use in young children."

In relation to the effects of ipecacuanha there is nothing to be opposed. "To the youngest infant it can be given with impunity."[1] The usual form, however, in which it is administered, viz., that of syrup, is extremely apt to become sour, and unfit for use. This is really serious as regards a remedy which should be kept always on hand and ready for use in every family having children. If on the other hand it is used in the form of powder or infusion, it is exceedingly nauseous and distasteful, and ofttimes administered only with extreme difficulty and after strenuous resistance and severe struggles. Such excitation of the system, causing increased congestion of the parts already in an abnormal condition, cannot but be provocative of harm. Engaged in practice in the city of New York, where physicians furnish a written prescription on their visitations to the sick, which then is sent to the pharmacist to be compounded, I was led many years ago, in order to meet these cases, to search for some drug that could be conveniently carried with one, and so render unnecessary the delay consequent upon sending out to have it prepared, which in the night especially is often very considerable. The desirability is evident of having such a form of remedy as could be kept in the house without fear of change by those having children subject to such disease, and, knowledge of its use having been previously acquired, could on the first alarm-note being heard, be given at once. The life of many an infant—many an hour of lingering anxiety—many a nocturnal call upon the physician would thereby be saved. It need scarcely be said that the mere matter of form or taste, of convenience of obtainment, or other non-essential properties, would not in themselves determine the choice of a remedy. With equal reason can it be affirmed that, all other things being equal, such matters should not be overlooked. It may be well therefore to consider in detail the properties which such an emetic should possess—properties almost a matter of inference, the indications for use being known. First of all it should be one upon which we can rely; it must always act and not fail. Secondly, it should, if obtainable, be of such character that if a greater or overdose be given no harm would result. This has always been a great point in favour of ipecacuanha, over-dosage with which when given as an emetic is unimportant;

---

[1] *Therap. Mat. Med. and Toxicol.*

[2] *Com. Dis. of Children.*

[3] *On Female Compl. and Children.*

[4] *On Infant Therap.*

[5] *Dis. of Inf. and Child.*

---

[1] Beck on *Infant Therap.*

and a serious objection to the use of antimony, which cannot be so administered with impunity. Beck[1] narrates a case in which "The 1/30 of a grain given to a child a year old labouring under croup, induced such severe and protracted vomiting, together with general prostration, as to require stimulants to save life." Thirdly, its systemic effects should not be too prolonged and depressing. From the general feebleness of their organisation, infants cannot sustain the effects of those emetics which profoundly depress the system. "On this account antimonial emetics are frequently hazardous to young children."[2] Fourthly, it should act promptly. The element of time in these cases is all important, and such emetics as act speedily, the effects otherwise being alike, are greatly to be preferred. Fifthly, it should be one that can be given with as little trouble and as little repugnance on the part of the patient as possible. All crying and struggling or resistance not only entails delay, but aggravates the condition of the little one by the general excitation consequent therefrom, as also by the local strain upon the parts. Such an emetic we have in the Hydrag. Sulphas Flava, a remedy long known, but much less used by the profession than its merits warrant. Barker[3] says, "My reasons for preferring this to all other emetics in croup are the following: It acts much more promptly and efficiently than ipecacuanha or alum; it is tasteless, and much more easily administered than either; it does not exhaust and depress the vital power like antimony. . . . It depletes the mucous membrane by an abundant secretion of mucus, which is thrown up; it removes from the larynx, by the forced expiration which it causes, any albuminous or fibrinous exudation, which may be there in a diffluent state, and which by remaining may become subsequently pseudo-membrane; it acts as a powerful revulsive, and thus diminishes the capillary circulation in the trachea and larynx." These results he considers that the active emesis from the Turpeth mineral (Hydrag. Sulphas Flava) accomplishes much more speedily and effectually than any other agent. Its properties are here clearly and concisely set forth, and a long and successful, and in every way satisfactory experience with it, causes me to endorse it as the emetic *par excellence* for croup. The average dose for children of from one to three years of age is three grains. For infants of much less than one year it is two grains, although even to them three grains can also be given without hesitation. For children over three years of age, four to five grains. If not acting in fifteen minutes, is to be repeated. Although, as with all remedies, the adjustment of dose to age should herewith be likewise observed, still the extreme care that ought never to be wanting in the use of tartar emetic is not equally demanded in the employment of the Hyd. Sulphas Flava.

---

[1] *On Infant Therap.*

[2] Beck, *Mat. Med. and Therap.*

[3] *Amer. Journ. of Obstet.*, May, 1870.

As previously noted, a variety of opinions also exists in reference to the frequency with which emetics should be administered during the course of the disease, or in other words, to the advisability of their repetition. Some instruct that they should be given over and over again during the disease, evidently placing their greatest reliance upon such remedy. Others say that, emesis having been once produced, their use should then be discontinued. I think neither are right. To keep a patient constantly under the influence of an emetic would beget a depression and exhaustion in no way agreeing with one of the general indications, viz., a sufficient but not sthenic support of the system. To be satisfied with a single primary emesis would be to forego the invaluable effects which by the operation of emetics we are enabled to obtain. *Medio tutissimus ibis* is here to be borne in mind, and an occasional emetic of the Hydrag. Sulphas. Flava (say once in six or eight hours, but dependent upon the case and the grade of its symptoms) will give us the benefits arising from its mechanical action in clearing out the air-passage from the abnormal secretion or exudation that has taken place, and at the same time re-impress upon the system the beneficial effects known as systemic.

Second indication: the relief of the congestion; and third indication: the resolution of the inflammation.

As in no case can it be said that congestion only is present and inflammation not yet set in, and as the treatment applicable to the one is equally so to the other, these indications in reference to treatment may be considered as one. Apart from the general regulation of the various secretions and functions of the system to be observed in all diseases, the use of such remedy or remedies as are especially known by the name of antiphlogistic are to be promptly and steadily made use of.

"Every case of croup demands the most active, efficient, and energetic treatment."[1] To one of these remedies it is the particular purpose of this paper to call attention, and I do so from the consciousness that to withhold such knowledge from my professional brethren would be wrong—from the conviction that the making known the success which has attended its exhibition in my hands may have much to do with the recovery of many a little one. The use of aconite in the treatment of sthenic inflammation is of course well known to all, but regarded with various degrees of confidence. An experience of over twenty-five years with it as a practitioner of medicine constrains me to feel that either the quality of the tincture employed, or a want of that knowledge, which as far as I have found is unrecorded, of the doses which in infancy as well as with adults are effective and yet not excessive, of the frequency of their repetition, in a word of its safe and yet effective exhibition, must be the cause or causes of its not more frequent use. A drug so powerful as aconite is well known and universally acknowledged to be, its toxicological properties being marked, would naturally be exceedingly likely to be given in doses not calculated to produce a maximum effect, rather than otherwise. This especially would hold true in cases of infants and children. If now erring, no doubt judiciously when the energy of the drug is taken into consideration, in this wise, it is apparent that *pro rata* it would be non-efficacious, and if the dose was greatly less than that which it would be proper to give, absolute disappointment in reference to its effects result. Such, I have no doubt, is a prime cause of its use being less general than would otherwise be the case. The doses here given are the results of numerous trials in severe cases when the almost evident certainty that death would otherwise result from the disease, has justified a careful augmentation of doses, for the purpose of producing its specific effects. These doses can be given safely and without fear. That such doses may not be exceeded I will not say, but unless excep-

[1] Aitken, *Science and Pract. of Med.*

tionally, I believe not. For a child of one year of age three to five drops of Tr. Rad. Aconit. in a two-ounce mixture, and a teaspoonful thereof to be given every two or three hours as the urgency of the case demands. For a child two years old the number of drops in such mixture should be increased to six; for one of four years to eight drops; for one of six to eight years of age to ten drops; and for one of from ten to twelve years to twelve drops. The Tr. Rad. Aconit. here referred to is that of the U.S.Ph., in the formula for which the proportion of drug to menstruum is six ounces to sixteen. This, as met with in the shops, varies greatly in strength and quality, and consequently in effect, and for such reason I invariably prescribe that made by E. R. Squibbs, Manufacturing Chemist, Brooklyn, N. Upon Squibb's preparations the entire profession know that reliance can be placed, and with no other drug can it be more strongly recommended that in its use the preparation employed should always be one and the same thing. This cannot be the case when made by different chemists, as its invariability depends not only upon the exactness of weight and measure and care in manipulation, but upon the quality of the ròot employed, whether expression is made use of or not, *et multa alia.*

Therefore the practitioner is earnestly recommended to assure himself of the quality and strength of the tincture he may make use of, and having once acquired a satisfactory knowledge thereof, to use such tincture, and from that one manufacturer (whoever he may be) only.

The fourth indication, viz., *the dissolution and expulsion of the membrane,* is met undoubtedly in part by the use of emetics. In the consideration of further means for such purpose the use of mercury at once presents itself. That it is superior to all others as an antiphlogistic agent cannot be questioned. Assisting in meeting the second and third indications, it is of especial service; in the fourth Evanson and Maunsell[1] affirm that " mercury can be administered to the youngest child, and indeed infants often appear to bear large doses better than adults," . . . that it " does not seem capable of salivating an infant " . . . and that it " constitutes our chief agent in subduing inflammatory action in infantile diseases." Pereira[1] remarks that "especially in croup, or as it is sometimes termed, plastic inflammation of the larynx, mercury is one of our most valued remedies." And to every physician the high position which mercury holds as an antiphlogistic agent is well known. The usual mode, however, of prescribing it in small doses of one or two grains in combination with Dover's powder is not that which I am in the habit of employing. The disease is too rapid in its progress and of too grave a character to allow of such a course. As an aid to the promotion of the various secretions of the system, and to the influence of other remedies thereupon, it, when so given, most assuredly assists. Here, however, more is wanting. A disease is present rapidly and surely imperilling life, and its advance can only be checked by the use, or mode of use, of such remedies as will oppose a powerful impression thereto. The administration of mercury in small doses does not do this, it simply effects an augmentation of the secretions; and again, neither does the disease last for such a length of time that the constitutional effects of mercury could be got, nor as a rule could such effect in the infant be obtained. In larger doses of from five to ten or twenty grains mercury acts in a totally different way, and when so given exerts a powerful influence upon the disease of a sedative and salutary character. Elliotson[2] strongly and earnestly advocates this course, and says, "There is extreme danger here, and therefore mercury should be given with the greatest freedom."

---

[1] *Diseases of Children.*

In addition to such a course of medication as here outlined, counter-irritation, a derivative means of relief so frequently applicable in disease, is here also of avail, and not to be neglected. A sinapism applied upon the upper part of the chest, and the application of a piece of raw salt pork or bacon to the neck, nearly circumferencing it, are the forms I am in the habit of using. The application of the pork, although a domestic remedy, is one from which much good results, not only in croup, but also in other diseases of the throat. When properly applied the air is excluded from the surface of the parts, an important point, from the fact that impressions thereto communicated are so readily transmitted. Furthermore, by the continuance of its application an eruption is produced which is highly beneficial. This eruption, almost miliary in its character at first, gradually assumes a more and more severe grade, and on such irritation of the skin being produced as is judged fully desirable the application should be discontinued, and in lieu thereof a piece of cloth soaked in oil applied. This is to be removed not at once, for by so doing the parts would be subjected to a sudden change, but gradually by the tearing off of a strip daily, until a mere band or ribbon is left for final removal.

---

[1] *Mat. Med. and Therap.*

[2] *Pract. Med.*

In reference to the *general* indications there needs not much to be said. The restoration of the various functions of the system—the abatement of fever—a sufficient but not sthenic support, here as in all phlogistic diseases, demand our attention. The exhibition of diluents to encourage secretion is, as far as it can be effected in the infant, an aid. The anti-plastic effects looked for from the administration of alkalies are not, I think, to be relied upon. The disease, too rapid in its progress —occurring in subjects to whom, as a rule, everything even suspected of being a medicine can only be given perforce—of a most grave character, is one demanding, and only yielding to, an energetic treatment. The use of the lime-spray, by means of the atomizer is all very well; but with how many infants can it be done? or if effected, effected satisfactorily? The use of lime practically limits itself to its employment as a drink in the form of lime-water, and the rendering of the atmosphere of the apartment moist by the vapour arising from it when slacked. The humidity of the air respired by the patient is an important —very important point, and must be secured, when not attainable as just suggested, by some means of evaporation.

The success attending the employment of the afore-mentioned remedies in croup in my own practice has been all that I could desire. A general outline of such treàtment, as far as it is practicable to give it, for treatment even in all diseases must be varied to meet the requirements of the individual case, is as follows:—On being called to a child labouring under croup my very first direction is the administration of an emetic of the Hyd. Sulph. Flava. This I have always by me, and so all the loss of time possible is avoided. A prescription is then given that more of the emetic powders may be obtained for subsequent use (for which directions are given), and the following mixture ordered—

℞ Tr. Rad. Aconit. gtt. vi.
Syr. Ipecac ʒij.
Spt. Nitrici Dulce ʒij.
Aq. Caleri (vel Anisi) gr. ℥ij.

The quantity of the Tr. Rad. Aconit. varying with the age as previously specified, as may also that of the Syr. Ipecac and Spt. Nitrici Dulce, the prescription given above being for a child of two years of age. The ipecacuanha in such prescription is for the purpose of encouraging secretion and not for emesis ; nor should it be in quantity sufficient therefor, a slight nausea only being desirable. The directions given are that vomiting having taken place, then, and not till then, a sinapism is to be applied upon the upper part of the thorax, extending from the superior extremity of the sternum downward with a view to the production of counter-irritation. This usually is effected in from ten to fifteen minutes, the proportion of mustard to flour being as one to two, and the paste being spread between two thin cloths. The length of time that it remains on is a matter moreover not to be disregarded, as I have seen the prolonged application of mustard upon the infant subject result in such severe prostration and collapse that life was endangered. Its non-removal occurred also simply from the forgetfulness of the nurse, and the effect upon the system was in every way similar to and identical with that arising from a severe burn or scald. Therefore, let it be well understood by the attendant that the period of time during which it should remain applied cannot be given, or at least only approximately, and can only be determined by examination made every few minutes. When on such examination rubefaction is observed to have taken place the mustard-paste should be removed and a cloth previously soaked in goose-grease, sweet-almond, or other oil applied. This, as well as the mustard-plaster, should be warmed before application, as also the slice of raw bacon (*v. supra*), directions for the application of which are at the same time given. A teaspoonful of the mixture is then to be given, and to be repeated every two or three hours as the severity of the case may seem to demand. The avoidance of all excitement, of draughts of air, and the preservation of an equal temperature, and humid atmosphere, is also enjoined. Furthermore, it is recommended that an alkaline drink of a drachm of carbonate of soda dissolved in water should be given in the course of the succeeding twenty-four hours if the same can be easily effected—otherwise not. The reason of such advice is that I do not believe its remedial power to be sufficient to warrant its administration unless such administration can be effected without difficulty. All crying, struggling, and resistance is antagonistic to our aim, and more than counterbalances the benefit, in so far as my experience goes, to be derived therefrom. If easily taken, well and good—its assistance is acknowledged; if not, the continuous forcing of it cannot be recommended. If by the next evening the croup-cough, as is most frequently the case, is no longer present, a continuance of the mixture, with however less frequency of administration and of care is directed for such period as may seem necessary. If on the other hand the distinctive cough yet exists (or during the night should return), the mixture is continued with greater frequency, if perchance the intervals between the doses have been three instead of two hours; the Hyd. Sulph. Flav. for the purpose of renewed emesis is again given, to be followed as before by a sinapism (the rubefaction having disappeared, as is usually the case), and additionally and subsequent thereto ten grains of Hyd. Sub. Murias ordered to be administered.

This can conveniently be floated upon a dose of the mixture, when given, and its adhesion to the fauces as deglutition takes place, will, to say the least, not prove detrimental. The visit upon the succeeding morning will in a very large proportion of cases find the patient convalescing nicely; but watchful care is still maintained and the mixture continued, *pro re nata*, until a night has been passed with no croup sound being heard. As long as it is heard the disease exists, and an unlooked-for exacerbation may now—alas! too late—render all treatment futile. The fever may abate, the hoarseness, if present, disappear, the pulse approach its normal character, the respiration decrease in frequency, then all and every other symptom may amend;

but just exactly as long as this peculiar pathognomic and unmistakable sign—the croup cough—is present, even so long is the patient's life in the balance. I have said, as will be noticed, that in a very large proportion of cases the disease will by this time have been conquered. Cases at times will present themselves, and have so occurred in my own practice, in which its subjugation is not effected. A continuance of the treatment, judiciously modified to the special requirements of each case, is recommended as that from which the best results will ensue. In extreme cases coming under my notice, when called in consultation, I have repeatedly seen recovery take place when in the opinion of all it could not be looked for. Can I possibly do otherwise, then, than place on record such line of treatment—the reasons therefor, and the success thereupon attendant ?

ON THE DISADVANTAGES OF OIL OF TURPENTINE AS A VERMICIDE.

BY F. DE HAVILLAND HALL, M.D.

TURPENTINE has long been reputed a good vermicide, especially for tapeworm,[1] but the unpleasant effects which so often attend its use have hitherto prevented its being very generally employed, and the two last cases coming under my notice in which this drug was used were such as to make me hesitate considerably before venturing to prescribe again a remedy so uncertain in its action, and one liable to so unpleasant, and in some cases dangerous, consequences.

The notes of the cases are as follows :—

No. 1. William B., aged 59, came under my care at the Casualty department of St. Bartholomew's Hospital, suffering from tapeworm. On June 5th, 1876, he was ordered to have no solid food after 2 P.M., and on the following morning to take a drachm and a-half of the oil of male fern, fasting, to be followed by an ounce of castor oil, the same process to be repeated the next day. This treatment succeeded in bringing away a large quantity of tapeworm, but not the head.

On August 28th, as there had been a return of the worm, he again came under treatment, which was similar to that first employed, and with a like result, viz., a large quantity of worm but no head. However, I hoped that as a piece tapering to a fine point had been discovered, the head might have been passed.

On December 4th he again applied to me, saying that joints of the worm had reappeared in his stools.

This time I ordered him :—

---

[1] Vide *Practitioner*, March, 1877, p. 170.

Sp. Terebinthinæ.
Mucilaginis au ℥ ss.
Aq. Menth. Pip. ℥ij.

to be taken on an empty stomach the first thing in the morning, and no solid food during the previous evening, to be followed by half-an-ounce of castor oil. This treatment had the effect of bringing away a large quantity of worm, but the head was not seen. The patient stated that soon after taking the turpentine he was in the greatest pain, which lasted for thirty hours. Every two or three minutes he had the inclination to micturate, but after straining he only voided a little blood-stained mucus—he said it was like passing "liquid fire." On December 7th, when I saw him again, he was still in pain about the bladder and suffering from frequent micturition. He was ordered bicarbonate of potash, hyoscyamus and buchu.

December 11th. Free from pain.

January 25th. No more segments passed up to this time.

No. 2. William Wells, aged 44, has been suffering from tapeworm for the last five or six months, for which he was treated unsuccessfully at the London Hospital, so on his own responsibility, on January 21st, he took about a wine-glassful of turpentine on an empty stomach the first thing in the morning. This purged him freely and brought away about a yard of the worm, but caused great pain in the bladder and bloody urine. For two days he had constant pain over the region of the bladder, with frequent micturition, only a small quantity of blood-stained urine being passed.

He applied at St. Bartholomew's the day after he took the turpentine, and I ordered him an alkaline draught and hyoscyamus, and on the 25th he reported that he was all right as regards his bladder. These two cases are, I think, sufficient to show that turpentine is anything but a pleasant remedy in large doses, and that the milder anthelmintics should have a thorough trial before it is resorted to.

ON A NEW PREPARATION OF IODINE.

BY J. CROUCH CHRISTOPHER, F.R.C.S.

THE aim of this paper is to introduce to the notice of the readers of the *Practitioner* a new preparation—perhaps a new compound —that in my hands has proved more useful and has fewer disadvantages than other remedies of like nature in more general use.

The preparation alluded to, in one fluid drachm of liquor, contains twelve grains of cinchona flava, one grain and a half of iodine in the form of hydriodic acid, and one grain of protoxide of iron.

The circumstance that the iron compound ever remains in the state of proto-salt (whereby its value is enhanced), and that the liquor never either by time or exposure becomes inky through the action of the tannic principle of the bark, tends to show that there is something more in this case than a mere mixing of ingredients.

That some new combination of iodine, the cinchona alkaloids, and the peculiar tannic principle obtains in this preparation is rendered probable by the fact that the same substances deport themselves differently when combined otherwise than in the present instance.

The cases in which this preparation has been found most useful were for the most part cases of secondary and tertiary syphilis, particularly those in which mercury had been lavishly used or abused—cases in which it was difficult to determine to what extent the diseased condition was due to syphilis, to the abuse of mercury, or to a combination of both. Great benefit has ensued from its employment in cases of persistent and frequently, recurring boils at a time when what may be termed a furunculoid epidemic existed.

It has been most serviceable also in cases wherein it was most important to give iodine in some form, without incurring the risk of depressing the patient unnecessarily—such as cases of scrofula, anæmia, and glandular enlargement. Some of these, intolerant of some of the officinal preparations of iodine, tolerated and were benefited by this. When the value of the various preparations of iodine comes under consideration with the view of prescribing and applying the preparation best suited to a given case, it is important to bear in mind the experiments and observations of M. Melsens, which show, among many other valuable indications, that a judicious or fitting choice of the right preparation of iodine is by no means unimportant in relation to certain cases and conditions of disease.

M. Melsens proved by experiment that iodide of potassium had peculiarly the power of rapidly eliminating mercury, where that mineral had been previously used, and that the acid preparations of iodine were far less active in that particular than it—a circumstance giving rise to consideration when prescribing preparations of iodine in those cases where the system is saturated with that drug.

He says "that the administration of iodide of potassium often causes intense suffering in patients who have been treated by mercurials, because the compounds of mercury fixed in the body are thereby rendered soluble and active, and a form is given to them which allows of their rapid elimination."

Before becoming aware of M. Melsen's observations, I had noticed the circumstance, that in patients who had taken mercury to salivation, but from whom all traces of the action of that drug had disappeared, salivation and tender gums reappeared almost immediately on the administration of iodide of potassium. This fact is referred to in my *Treatise on Syphilis*, pp. 21 & 22, though at that time I failed to suspect the cause or to detect the reason of it.

With regard to the preparation which is the subject of this paper, there has been good reason to believe that the risk of producing the evil results of the rapid elimination alluded to would be reduced by its administration, as no note of this inconvenience appears in the record of cases treated by it, but many bearing testimony to its utility and safety.

SULPHUR AND SULPHUROUS ACID.

BY WALTER FERGUS, M.D.

When, in the year 1849, I was appointed to take the charge of Marlborough College, I found it to be most necessary to seek for a means of thoroughly purifying the air of the dormitories in which the pupils slept. The first agent which I employed for the purpose was chlorine gas, generated in a concentrated form, and in great abundance, from a mixture of peroxide of manganese, common salt, and sulphuric acid. It was, however, difficult to use it constantly owing to its very irritating properties. In addition to this, doubts were thrown upon its efficacy as a disinfectant by a great authority in sanitary matters, Dr. Wm. Budd, of Bristol, who wrote to the head master, saying that chlorine, as a disinfectant, was of no value at all. This I did not acquiesce in, as I had proved the antiseptic and disinfecting power of chlorine by several experiments and observations. The deleterious effects of the gas upon furniture, locks, and all kinds of metal work, led me to look for a substitute. The permanganate of potash and carbolic acid were tried as disinfectors and aerial purifiers. The diffusion of these fluids in a diluted state was effected by means of a large enema apparatus, fitted with a fine rose jet, made for me by Messrs. Maw and Co.; a fine shower of the disinfectant was thus diffused most thoroughly through the air of the rooms. But this mode of application failed, inasmuch as it could not penetrate and permeate the air in corners or crevices, or behind or under furniture. When these matters were considered, and a disinfectant of a diffusive character being required, I then thought of burning sulphur; after trying this for some time, I reverted to the partial use of chlorine, using sulphur and chlorine alternately, confining the use of chlorine to the larger rooms, and places where there was nothing to spoil.

Soon after this I wished to procure some liquid sulphurous acid to try its effects as a parasiticide. I could not meet with it on the list of any wholesale chemist, and by the aid of my text-book of chemistry, I made the solution of the acid as I required it, and gradually began to use it in various ways.[1]

Dr. Dewar's book was put into my hands by the head master, who knew of my using the acid. I was more than rejoiced to find that what I had begun to work out had been so much more thoroughly investigated by Dr. Dewar. I was naturally led to extend the use of the acid, and it is with a view of giving my personal experience in the matter that I have prepared this paper.

Sulphur has, from times of the remotest antiquity, been regarded as a purifier, and it even appears at one period to have been regarded with an approach to superstition. We read of sulphurs of various kinds, possessing multitudinous properties, but all looked upon as purifiers, and allied to salts of beneficial use. The mention of sulphur by the ancients, and by Homer in particular, has been so frequently referred to that it needs not to be repeated here.[2] It is, however, the most remarkable instance of an almost prophetic announcement of the virtues of sulphur. We cannot say with Homer, that sulphur is the "remedy of all evils," or the "cure of all sores," but I hope to show how much we might owe o sulphur and its compounds if its properties were duly studied and applied with judgment and reliance upon them.

I propose to consider the properties of sulphurous acid under three heads, first, as an antiseptic; second, as a disinfectant; and thirdly, as a therapeutic agent. The antiseptic power of sulphurous acid is so well known that it has for some time been of commercial importance. A large manufacturer of the acid has introduced it as a means for the preservation of meat. His success has been considerable. He has placed on his table joints of meat that, by means of sulphurous acid, had been kept for six weeks, and was not in any way distinguishable from meat kept the ordinary time. I am disposed to think that the problem of carrying meat across the ocean in a fit state for use at the table will eventually be solved by the use of a combination of sulphurous acid with a cold atmosphere in properly constructed ships.

---

[1] A strong solution of sulphurous acid is now purchasable at the low price of 4*d*. per pound.

[2] See Letter from Dr. Henry in *British Medical Journal*, January 6, 1872; also Dr. Angus Smith, *On Disinfectants*, article "Sulphur," p. 40. The reference is to the *Odyssey*, book xxii. line 481, &c.

To put the power of the acid, as an antiseptic, to a comparative test, I placed in four tall glasses equal quantities of strong beef tea. One of these was left as it was, to another carbolic acid was added, to another sulphurous acid, and to the fourth terebene. The glasses were kept at a temperature between 70° and 80°. At the end of the second day the beef-tea was sour; in the glasses provided with antiseptics it was then quite good and free from smell. On the fourth day the beef-tea was putrid, and very offensive; there was now a *slight* putrescent odour in the glass with terebene. On the sixth day the same odour was perceptible in the glass with carbolic acid. Several weeks after the glass with the sulphurous acid remained free from signs of putrescence. The same results followed experiments made with solutions of various other substances, establishing thoroughly and unmistakably the antiseptic powers of sulphurous acid.

In connection with the consideration of the antiseptic powers of sulphurous acid, its power of destroying the activity of virus, may be adverted to. The most conclusive observations on this property of the acid are to be found in No. 6 of the new series of Reports of the Medical Officer of the Privy Council, where Dr. Baxter, in his report on disinfectants, shows that sulphurous acid has a marked superiority over chlorine and carbolic acid in its power of rendering vaccine virus absolutely inert; and, as he says, "this under conditions which seem, above all others, to render the virulent particles least susceptible to destructive influences." The comparative efficacy of these agents is well exhibited in the following table, which I have extracted from Dr. Baxter's article:—

ACTION OF CHLORINE ON DRY VACCINE.

No.	Duration of Exposure.	Number of Vesicles on Arm with Virgin Points.	Number of Vesicles on Arm with Disinfected Points.	Remarks.
1	5 minutes	3	1	The Vesicles produced by the virgin points were all large; those furnished by the disinfected points very small.
2	10 ,,	3	1	
3	15 ,,	3	2	
4	30 ,,	2	0	
5	30 ,,	3	0	

ACTION OF SULPHUR DIOXIDE ON DRY VACCINE.

No.	Duration of Exposure.	Number of Vesicles on Arm with Virgin Points.	Number of Vesicles on Arm with Disinfected Points.	Remarks.
1	10 minutes	3	0	
2	10 ,,	3	0	
3	10 ,,	2	0	
4	10 ,,	3	0	

ACTION OF VAPOUR OF CARBOLIC ACID ON DRY VACCINE.

No.	Duration of Exposure.	Number of Vesicles on Arm with Virgin Points.	Number of Vesicles on Arm with Disinfected Points.	Remarks.
1	5 minutes	3	1	No constant difference observed between vesicles furnished by carbolised and those furnished by virgin points.
2	10 ,,	3	3	
3	15 ,,	3	1	
4	20 ,,	3	3	
5	30 ,,	3	2	
6	30 ,,	2	0	
7	60 ,,	3	0	
8	60 ,,	3	0	

See also the interesting experiments recorded by Dr. E. Sansom in the *British Medical Journal*, Oct. 5, 1872, p. 375, wherein the superior power of sulphurous acid as an antiseptic is fully proved.

The more strictly disinfectant properties of sulphurous acid present a wider field for observation and discussion, but all questions relating to the disinfectant power of this acid, and also of its three most powerful rivals, chlorine, carbolic acid, and potassic permanganate, have been so fully considered and in a manner settled in the report on disinfectants above alluded to, that I need do no more than refer to the results so fully and so patiently realized by Dr. Baxter. His conclusions are in favour of sulphurous acid, both as a disinfectant of virulent liquids, and likewise as an aerial disinfectant. My own observations led me to the same conclusion several years before the publication of this valuable report of the Medical Officer of the Privy Council. No more conclusive test could have been desired of the power of sulphurous acid as a disinfectant, than it was put to on the following occasion.

After an outbreak of scarlatina, unexampled in the severity of its type and the number attacked by it, when it seemed to be hopeless to expect the eradication of the disease in the month which was allotted for the purification of all things and places where infection might lurk, sulphur was called into requisition, upwards of 4,000 blankets, mattresses, coverlets, pillows, and other articles were thoroughly exposed to the action of burning sulphur. Upon lines stretched across the rooms the articles were hung, so as to allow the fumes to reach every part of them; large iron braziers, made on purpose, were partially filled with glowing charcoal, upon which a quarter of a pound of sulphur was thrown, the fumes rose rapidly, and it was soon impossible to breathe in the rooms, which remained shut up for four hours. The success was so complete that there has been no epidemic of scarlatina since the outbreak of 1870, and whenever an isolated case has occurred, sulphur has been relied on, and has always arrested any spread of the disease.

The therapeutic uses of sulphur and its compounds have attracted of late considerable attention,—this is mainly owing to the publication of Dr. Dewar's work. The most recent proposition that I have met with, is to regard sulphur as a specific against scarlatina. I have had no opportunity of testing the treatment recommended by Mr. Pigeon,[1] but I consider that it is well worthy of a careful trial, and further observation may be regarded with interest, seeing that sulphur has been proved to destroy the contagion of scarlet fever more powerfully than any other agent yet employed.

---

[1] *Lancet,* Nov. 25, 1876, p. 770.

No remedy gives such relief, in all forms of inflammation of the throat and tonsils, as the frequent spraying of the parts with undiluted sulphurous acid; so great is the ease given by it, that patients ask to have it repeatedly applied, expressing their feeling of comfort after each application. The turgid redness of the inflamed parts is instantly changed to a light pink hue.

Nothing has given me such satisfaction as the action of the acid upon severe cases of diphtheria, in such cases the frequent spray, the aerial administration of the fumes of the acid and ice, are the sole remedies to which I trust topically.

Some years ago, I published my experience of the use of this acid in the treatment of chilblains. Under its use, these troublesome annoyances of youth are speedily got rid of, and a broken chilblain is never seen.[1]

The alleviation of the distressing symptoms of hay asthma, by the inhalation of the vapour of sulphur, or sniffing up the nostrils of diluted liquid sulphurous acid, is very marked. I have advised the sufferer to carry in his pocket a bottle of the acid, and to have recourse to it as soon as he feels the approach of his enemy. In mild cases the use of the acid, three or four times a day, keeps the patient in a state of comfort. When it is attempted to moderate the heat of a summer night by sleeping with an open window, the victim of hay asthma usually suffers severely; but if some sulphurous acid is generated on the window sill a peaceful night is the result.[2]

In every kind of bruise, or sprain, nothing is so serviceable as sulphurous acid; such accidents are of frequent occurrence in a large school, and when an ankle or a knee is the seat of injury, rest in bed involving loss of time, is necessitated; since I have used sulphurous acid, in the treatment of such injuries, this loss of time has been reduced to a minimum. The treatment is this: the injured joint is sprayed with pure acid, using a Richardson's apparatus, for six or seven minutes, the inflamed and painful part is rendered absolutely cold, and the pain is nearly removed. The patient is next sent to bed, with the joint enveloped in rags, saturated with a lotion consisting of one part of acid to eight parts of water, the rags being kept cool by frequent changing; at the end of thirty-six to forty-eight hours the swelling has usually subsided; and on the third or fourth day a bandage is tightly applied, and the patient is able to go to work again; if there is any pain, tight strapping with belladonna plaster on leather is used under the bandage. I have never known any ill consequences to follow this treatment. In all cases of minor injuries, such as sprains of the fingers, and bruises of every description, the acid acts in the most satisfactory manner; no other remedy gives such rapid relief to pain, so readily reduces the temperature, and prevents the occurrence of inflammatory action.

---

[1] *Lancet*, Nov. 26, 1870, p. 769.

[2] *British Medical Journal*, Jan. 28, 1871, p. 90.

I have not had much experience in the treatment of compound injuries; the only case of compound fracture of the leg, in which the sulphurous acid treatment was pursued, was one in which the injury was very severe, the tibia was splintered and projected considerably through the wound in the integument. The wound had to be enlarged in order to replace the bone; sulphurous acid lotion was used, and the wound was never examined without having a spray of the acid constantly playing round it. The wound healed with scarcely the appearance of pus, and the patient was dancing at a ball in January the accident having happened in October.

With wounds and contusions of the face it is of the greatest importance to obtain rapid healing and to avoid the formation of pus, and so obviate the risk of erysipelas and unsightly scars. All such injuries I have found to be best treated by sulphurous acid. In one case where a master was run away with by a horse in the forest, and thrown with his face against a tree, there was severe bruising and laceration, two deep cuts extending diagonally across the cheek-bone, so as to separate an island of skin between them; here the acid was used, and a lotion of one part of acid to seven of water kept constantly applied: there was on the second night a threatening of erysipelatous inflammation, but perseverance with the remedy was rewarded by rapid healing of the wounds, and at the end of a short time there was scarcely the appearance of a scar.

My limited experience of the value of sulphurous acid in the treatment of wounds, is fully corroborated by the results of its use, whenever it has had a fair trial. In the *Medical Times* of September, 1871, there is an account of the English hospital at Metz, during the Franco-Prussian war; the writer says:—"Among those points which have appeared to me of most interest in our work at Metz, I will mention the use of a solution of sulphurous acid as a dressing for wounds: it was our general dressing for wounds in all stages, and was found most valuable. I am aware that it is not a new remedy, but I believe that it is by no means so generally used as it deserves to be. The preparation we used was a strong aqueous solution of the gas, of which about half an ounce may be mixed with a pint of water.[1] With this lotion the wounds were first washed by means of an irrigator, and afterwards dressed in the same way as with any other lotion. Sulphurous acid was used with good results in hospital gangrene. It is also a valuable dressing for fresh wounds, as amputations; but I think its healing effects are most evident in large open sores, whether the direct result of wounds or the result of sloughing, or phlegmonous erysipelas—such sores ulcerate at one point of their circumference, while they heal at another, often requiring months to heal, and sometimes exhausting the patient.

"I may give one of our cases as an example of many:—A man who had received a slight wound had phlegmonous erysipelas of the thigh, leg, and foot. Incisions had been made from the upper part of the thigh down to the dorsum of the foot. We found him with immense indolent sores, the result of the disease. They were first dressed with carbolised water, carbolised oil, and other things, the sores healing at some points and extending in others. After a single dressing with sulphurous acid lotion, they assumed a better appearance; healing went on rapidly, and, when we left him, the man was as nearly as possible well. I have not heard that it was generally used in other military hospitals. A French surgeon told me he had used it, but did not like it, because it healed wounds too rapidly. On inquiry further, I did not find that the rapidity of healing had led to bad results in his practice.

---

[1] I prefer a much stronger solution, generally using one part of acid to from ten to twelve parts of water.

"I think it probable that sulphurous acid would be useful in dressing the large granulating surfaces resulting from burns."[1]

With the experience of the Metz hospital it seemed to me at the time, unfortunate, that sulphurous acid was not brought into requisition on the occasion of the explosion on board H.M.S. *Thunderer;* carbolic acid lotions were then used, and I must confess that the carbolic treatment of large wounds, or extensive loss of integument, has always seemed to me to be of questionable benefit. Whenever I have watched the effect of carbolic acid upon wounds and sores, I have uniformly seen that it does not promote granulation and healing, but rather that slow and sluggish repair goes on. Sulphurous acid while it arrests the formation of pus and prevents the occurrence of putrid smells, is at the same time possessed of most healing properties, soothing in a grateful manner the pain in wounds. A dressing that I would recommend would be a lotion consisting of one ounce of sulphurous acid, half an ounce of laudanum, and twelve ounces of water.

Unfortunately, carbolic acid has attained to a position from which it may not be easy to displace it in surgical wards of hospitals. But a consideration of the comparative power of what may be called germ destruction, belonging to sulphurous acid, and to carbolic acid respectively, shows that sulphurous acid is by far the most energetic and effective of these two agents in retarding decomposition, and in the destruction of virus. It would seem to be fairly established that sulphurous acid might with many advantages take the place of carbolic acid. To mention only one of these advantages is enough; carbolic acid is a deadly poison, while sulphurous acid is free from all risk of poisoning. It is fearful to read of the many deaths that have been due to the accidental administration of carbolic acid. Perhaps the most harrowing event that could happen to skilful and humane nurses, such as are the East Grinstead Sisters, was what took place quite recently, when the sister in charge at the Small-pox Hospital administered a dose of the fatal poison instead of port wine. Frequently I have shuddered at the sight of large bottles of carbolic and other poisonous lotions, standing on the dressers' table in the wards of hospitals, where they are kept ready for use when required. I have also observed that sulphurous acid has not hitherto appeared to be in general use; when I have noticed this, I have been told that either there is a prejudice against its use, or that it has never been tried. The prejudice against its use is owing, doubtless, in great part, to statements that appear in the works of authorities of weight on the question of disinfectants. Dr. Angus Smith, for instance, writes:—"This acid gas is an irritant and causes coughing, which becomes painful and dangerous according to the amount used," and "as sulphurous acid is destructive to animal structures, it does not seem advisable to use it more than can be be avoided."[1] This popular, and I may say scientific, prejudice is entirely dissipated if the action of the fumes of sulphur is carefully studied. It was during the purification of the blankets, bedding, &c., above referred to, that I learned, not only the ease with which the gas may be borne, but also the benefits resulting from its inhalation. The purification could not be intrusted to any second person, and for upwards of three weeks I had day after day to breathe the gas in an extremely pungent degree of concentration. The only effect upon my health, was, that I lost a very troublesome cough, and quite recovered without a day's change of air and scene, from the fatigue and exhaustion entailed by the hard work and anxiety of a time extending over three months, when the outbreak of scarlatina, had taxed to the utmost the physical, as well as mental endurance of all who were concerned in battling with it.

---

[1] *Medical Times and Gazette*, Sept. 16, 1871, p. 358.

The experience I gained enabled me to adopt the practice of burning sulphur in rooms with the patients in bed; every morning as soon as the rooms are opened, about two teaspoonfuls of sulphur are burned so as to raise a cloud of fumes; the few patients who object to it cover their heads in the blankets, but most of the patients in no way feel inconvenienced. After the sulphur is burnt out every head is covered, and the windows and doors being thrown widely open, a thorough purification and renewal of the air of the room is obtained.

Patients suffering from bronchitis and pneumonia frequently experience positive relief from inhaling the fumes of sulphur. In a severe case of broncho-pneumonia, attended by violent suffocative paroxysms, the patient, when he felt the approach of the attacks of suffocation, would call out, "Sulphur, sulphur!" and on lighting some sulphur close to him, he obtained almost instant relief. My firm conviction is, that without the aid of sulphur his attack would have had a fatal ending. He recovered, and lives a strong, robust man, without a trace of mischief in the lungs.[1]

---

[1] *On Disinfectants*, p. 47.

The fact of this tolerance of the fumes of sulphur, both by the sick and also by persons in health cannot be too widely known and established. In the most interesting account of the stamping out of an importation of small-pox into Iceland, in the year 1871, Dr. Hjaltelin, while recording the successful use of sulphurous acid as the disinfecting agent, protests against the idea of injury to the respiratory organs, and gives instances where men exposed to the use of sulphur for quarantine purposes, were exempt from catarrh which was epidemic, and very common all round the neighbourhood.[2]

It would occupy too much space to enumerate all of the uses to which sulphurous acid, as an antiseptic, a disinfectant, and a therapeutic agent, has of late years been put. I will now briefly describe the points, which I think most worthy of attention, in the use of aërial disinfectants.

I do not think that it is well to have a slow continuous evolution of the gas going on in a room; I greatly prefer to use it at intervals, in full strength, and to flush the room immediately afterwards with pure air from the outside. If sulphurous acid is constantly given off at a low degree of tension, it is apt to form combinations in the sick-room that give rise to bad smells, and in many instances it may become in this way more of an enemy than a protector.

The mode of using sulphur, that I have found to be most convenient, is to add to common flowers of sulphur about the fortieth part of its weight of finely powdered charcoal. When sulphur is burnt by itself, it melts and flows about in liquid streams; the addition of the charcoal prevents this, the sulphur burning quietly, without the risk of setting fire to neighbouring combustible articles. The addition of the charcoal does not impair the purity of the sulphurous acid, as it is not consumed, but is found unburnt at the end of the process.

---

[1] The treatment of phthisis by inhalations is once more revived. In Dr. Burney Yeo's lecture on this subject, reported in the *British Medical Journal* of February 17th, no mention is made of sulphur vapours, only an allusion is made to the probable good effects of the sulphurous waters of Eaux Bonnes.

[2] See *British Medical Journal*, November 4, 1871, p. 519.

A convenient quantity of this mixture is placed upon a piece of sheet-iron about nine inches square, and is readily lighted by a match or a hot cinder; it may be carried about, or placed in any part of the room until it is burnt out. As considerable heat is generated, it is well not to place the iron on the floor, or on any wooden construction; it is safer to set it in a wash-hand basin, or to put a brick under it. For the fumigation of larger rooms a piece of sheet-iron two feet square is used, and three-quarters of a pound of sulphur burnt on each square. I feel that in stating my experience of the uses of sulphurous acid I have been led to the mention of much that has already been made public, and that has in many places been acted upon since Dr. Dewar first called serious attention to sulphur and sulphurous acid. There are, however, good reasons for a renewal of attention to the properties of these agents. There seems to be a natural prejudice against the use of anything simple and common—a desire of novelty predominating over the search for utility. Thus we see propositions made for the use of such an agent as the bisulphide of carbon as a source of sulphurous acid; this bisulphide has, as it usually occurs, a most abominable smell; it is highly inflammable, so that if it came into general use we might expect to hear of dangerous burns, and possibly conflagrations from its use; then, sulphurous acid would get all the discredit, and be driven from the wards of hospitals and sick-rooms. When burned in a lamp in a close room, the peculiar odour of the fluid is distinctly perceptible, mingled with the sulphurous acid.

The antizyme of Dr. Bond is entirely innocent of the dangers of bisulphide of carbon, but it seems to be a troublesome process for the attainment of a simple end; the evolution of the gas is also very slow, and open to the objections above stated regarding the constant slow liberation of disinfectants.[1] The simplest form of sulphur-fumigation is by far the best and most efficient; its familiarity and cheapness ought to create a welcome for it, rather than prove a hindrance to its adoption. The present prevalence of scarlet fever has led to the suggestion of many modes of obviating the risk of carrying the contagion by attendants upon the sick. A short time ago, a plan was propounded in the public papers, which it may be well to mention here, as it is identical with the precautionary measures that I have for long adopted with entire success. The writer proposed that when scarlet fever, or small-pox prevails in any town, the corporation should provide rooms at various points where nurses, medical attendants, and clergymen might be readily disinfected after being in contact with infectious cases. The writer states that during the Franco-German War such rooms or closets were provided, so that when fever prevailed in any corps, the men of the infected corps were compelled to pass through these chambers, at least once every day. If these chambers were kept full of sulphurous acid, it would be easy to enter sufficiently for the purification of clothes in a very short space of time. Whenever I am called to see an isolated case of scarlatina, it is my custom to light some sulphur in a small room before making the visit; at the end of the time spent with the patient the room is full of the sulphur fumes; remaining in the room just long enough to wash the hands with a disinfecting soap suffices to disinfect the clothing, so that no instance of carrying the infection to others has occurred.

---

[1] The alcoholic solution of sulphurous acid prepared by Messrs. Herring contains nearly three times more acid than is procurable in the aqueous solution. It seems to be a most convenient preparation for the easy conveyance of large quantities of acid in a comparatively small bulk.

THE ASPIRATOR IN HEPATIC ABSCESS.

BY GERALD BOMFORD, M.D.,

Bengal Medical Service.

The aspirator at the present time appears to be suffering from that reaction which sooner or later overtakes all fashionable remedies. Many medical men in India are now rejecting it as useless in hepatic abscess; and the author of an article on this subject in the October number of the *Practitioner* only mentions it to condemn it. But I think we may still fairly claim for aspiration, (1) that it is the simplest method of treating abscess of the liver; (2) that it does no harm, and if it fails, any other treatment can be tried afterwards; (3) that it can be used at an early stage before the diagnosis is certain; (4) that in many cases it effects a perfect and almost immediate cure. The following case is an instance of complete recovery after a single tapping; it occurred last year at Alipore, a suburb of Calcutta. The military cantonments there have a reputation of being exceptionally unhealthy, as malarious disease and dysentery are always more or less prevalent in them, but this is true of many places in Bengal.

B——, aged forty years, a regimental dhobie (*anglicè*, washerman), first came under my care on September 23rd, 1876, when he was admitted into hospital at Alipore, complaining of fever, debility, and acute pain in his right side. About six months before this he had had a severe attack of dysentery, which had lasted for nearly two months, and about a month after the dysentery ceased he had begun to feel pain in the hepatic region, and to lose appetite and strength. On examination, I found the skin of the seventh and eighth intercostal spaces in the right axillary line œdematous, reddened, and exquisitely tender. In the mammary line the liver dulness reached upwards as high as the fourth rib, and downwards a finger's breadth below the margin of the ribs. The liver could be readily felt at the epigastrium, and was firm to the touch and very tender. The increase of liver dulness was quite uniform. A distinct friction sound was audible over nearly the whole right side of the chest. He had a hard dry cough, and suffered from night-sweats. His temperature varied from about 100° Fahr. in the morning to 103° in the evening.

On September 25, Professor McConnell, of the Medical College, Calcutta, kindly saw the patient, and as he confirmed my diagnosis I determined to aspirate at once.

The operation was performed with the largest canula-needle of an ordinary Dieulafoy's aspirator, which was thrust through the œdematous skin in the seventh intercostal space, and passed in a distance of two inches. No chloroform was given, and very little pain was caused. Fifty ounces of characteristic pus were removed, the last few ounces being exceedingly thick and viscid. Lastly, about a drachm of venous blood came through the tube, and I then withdrew the canula, and closed the wound with collodion. The pus was typical hepatic pus, and had a peculiar faint, but not putrefactive odour, although numerous bubbles of gas were mixed with it. The next day all œdema of the skin had disappeared, the liver dulness had returned to its normal limits, and he was quite free from pain. Although he was extremely weak, I restricted him entirely to milk without stimulants, for fear of dysentery, which often returns after operation in these cases, but he had the good fortune to suffer from constipated bowels. His temperature fell below the normal directly after the operation, and continued so for some days. He rapidly gained flesh and strength, and was discharged from hospital on October 19th, not having had any symptom of return of the abscess. He has since marched with his regiment to Meerut, and has been exposed to most severe weather in camp at Delhi without suffering in the least, and he is now (February 1, 1877) in perfect health, and doing his work as well as he ever did.

ON THE SO-CALLED ANTAGONISM OF ATROPIA AND MORPHIA.[1]

BY PROFESSOR BINZ, OF BONN.

During the last thirteen or fourteen years a number of investigators have busied themselves with the question, whether or not morphia and atropia react as antidotes one upon the other. Bezold stands alone in giving an affirmative answer, and that in a very restricted sense. The rest of the evidence is exclusively negative in its results, but experience in the treatment of the human race impresses even the most critical reader with the truth of the opposite view, namely, that the subcutaneous administration of a moderate dose of morphia in cases of poisoning by atropia, and of a small dose of atropia in cases of poisoning by morphia, will, as a rule, ensure favourable results.

The lecture on Experimental Toxicology which I delivered at the commencement of this quarter made me see the necessity of personally investigating this knotty point. I proceeded to make the following simple experiment:—

Before the lecture a young dog was poisoned with morphia, ·075 gram., with the following results: the sensorium was completely paralysed, the pulse fell from the normal rate of 140 to 42, and was hardly perceptible in the thorax, the breathing became very weak and fell to 22, and the heat of the rectum was from 3° to 4° below the normal temperature. Whilst in this state of collapse, 0·0005 sulphate of atropia in ·5 of water was administered by a subcutaneous injection in the neck. Within ten minutes, the dog began to show signs of renewed animation.

---

[1] Our valued contributor, Professor Binz, has sent us this paper which he has published in German in the *Deutsche medecinsche Wochenschrift*, No. 62, 1877.

The pulsation of the heart could be distinctly felt, and rose to 140, the respiration was now 42 in the minute and much stronger, and the temperature alone remained unchanged. The improvement in the circulation and breathing persisted. The dog remained alive.

A long needle in the ventricle and a delicate lever on the diaphragm, to each of which a small piece of paper was attached, were sufficient to make the results of the experiment visible to the audience.

A second experiment on a somewhat older dog produced similar results, and on that occasion, with Dr. Heubach's assistance, I made a more complete and extended series of experiments by means of the hamatometer and the kymographion. When the pressure of blood has been diminished by morphia, the improvement which follows the administration of atropia is most remarkable. In fact the increase of the pressure is sufficient to make a column of mercury rise from 70 to 140 mm.

The improvement invariably becomes apparent a few minutes after the injection of the counter-poison, and is caused by the paresis of the cardiac branches of the vagus. Consequently the pulse is rapid, and the single excursions of the ventricle are low. The heart, which is in a kind of permanent diastole, and therefore dilated, holds a larger quantity of blood, and its movements are easily felt below the ribs. The effect was observed with the help of the manometer for more than an hour.

The dogs, when released and placed on the ground, ran at once, though unsteadily, into a warm corner, and soon recovered completely.

Our experiments have led me to the conviction that the objections which have been raised to the treatment by atropia of the intoxication produced by morphia, although apparently justified by several experiments on animals, are untenable. I not only perceived no injurious effect from the accumulation of the two poisons, but the indirect augmentation of the pressure of blood on the heart, and the direct improvement of the respiration, by the excitation of the respiratory centres, both contribute materially to recovery.

An animal poisoned by morphia dies from the complete paralysis of both these organs. If their activity can be maintained for a certain time, the constitution is enabled to throw off the poison, party through the urine, and partly by decomposition.

In both cases the probability of a good result will be increased by the healthy action of the various organs, which must be impeded when the pressure of the blood and the rate of breathing are much below their normal state.

Experiments are now being made as to the measurable effect of morphia, as a counter-poison in cases of poisoning by atropia. The results are apparently not easily reduced to figures, as dogs are very unequally affected by large doses of atropia. This is of less importance because the effect of a powerful dose of morphia in diminishing the well-known excitement produced by atropia has not been so often denied.

It has been much discussed if the above facts are due to the "antagonism" of the two substances. This word designates an idea, to which a wide or narrow, an absolute or relative meaning can be attached, and will be rejected or denied according to the position previously taken up by the reader. This does not alter the fact that, under certain circumstances, the one poison possesses the power of destroying or diminishing the action of the other.

Further details with diagrams will be published by Dr. Heubach in the *Archives of Experimental Pathology and Pharmacology.*

Reviews.

Cyclopædia of Practical Medicine. By Dr. H. von Ziemssen. Vol. VI. The Diseases of the Circulatory System.

The first division of this volume is written by Rosenstein and translated by Dr. E. G. Geoghegan, and commences with the usual account of the anatomy, &c., of the heart, and the means for ascertaining its position and its state. This is carefully done as a matter of course, and a distinction is drawn betwixt "reduplication" and "division" of the heart sounds, for which an explanation is given. The necessity for exertion on the part of the patient in order to elicit a doubtful murmur in some cases of valvular stenosis is insisted upon. Then come the diseases of the endocardium, and a diphtheritic form of endocarditis is described. It is pointed out that a certain amount of disease may form in the flaps of the valves without insufficiency being produced. As to the treatment of valvular affections, it is written "The sovereign remedy, which may be used in every stage of valvular disease, with merely variations in the dose, is digitalis;" and as if this expression were not strong enough, it is put in italics. The next division consists of the changes in the position of the heart, and diseases of its substance. It is written by Schroetter, and translated by Dr. Wheelock. The view is taken up that fatty degeneration of the heart is due most frequently to a "chronic parenchymatous myocarditis." Its relations to preceding hypertrophy are not apparently appreciated, although the greater frequency of disease in the left coronary artery is noted, and ought to raise some questionings. The third division is that of congenital diseases of the heart by Lebert, translated by Dr. Dwight. It is brief and explicit. The section on diseases of the vascular system is by Quincke, translated by George Balfour, and is, as might be anticipated, an excellent chapter. The reader will find in it full allusion to the discussions on arterial changes which have recently taken place in this country. The parts devoted to chronic endarteritis and to aneurism are very good. The results of general arterial narrowing are interesting. There is also a section on the diseases of the lymphatics—a subject comparatively new to many readers. The diseases of the pericardium are given by Bauer, and translated by Wheelock; they are well described.

The rest of the work consists of whooping-cough, diseases of the lips and mouth, and diseases of the soft palate. The first is by Steffen, translated by Haven Emerson. Quinine is strongly advocated in the treatment. The diseases of the lips and mouth are by Vogel, so well known for his work on diseases of children. The different affections are given in a satisfactory manner, and furnish much useful information. Noma seems to proceed to more terrible lengths in Dorpat than it does usually in England. The last division is that of diseases of the soft palate, by Wagner; and, like the preceding section, is translated by Dr. Cohen. Diphtheria is most elaborately considered under the title of pharyngeal diphtheritis. It will be read by many with much attention in consequence of the recent discussions. The last half of the book occupies a considerable space, and is well done.

As to the diseases of the circulatory organs, the information is very complete as regards attention to the literature of the subject and to the facts of morbid anatomy. But after all there is a certain thinness about the handling which suggests an insufficiency of thought as to the origin and course of the morbid processes, the most important matter in the chronic affections of the heart, especially as to the remedial measures, preventive and curative.

This defect is partially compensated by an acquaintance with the literature of heart-disease much beyond that of ordinary text-books; and the reader will find perhaps a fairer view of the entire subject than is to be found elsewhere. The translators have done their work well.

Diseases of the Peripheral Cerebro-Spinal Nerves. By WILHELM HERMICK ERB, Vol. XI. of Ziemssen's Cyclopædia of Practical Medicine, translated by Henry Power. London: Sampson Low & Co., 1876.

THE title of this work does not exactly define its scope, for not only does it treat of diseases of the peripheral cerebro-spinal nerves as such, but generally of all affections which manifest themselves through the cerebro-spinal nerves. To separate the consideration of nervous affections into central and peripheral is indeed an artificial division, incapable of being carried out with advantage. This work is a very voluminous, but at the same time a very thorough, consideration of the subject of which it treats, clearly written and admirably translated. It will enhance the already well-established reputation of the writer. It is impossible here to do more than briefly indicate the extent and character of the work.

Sensory neuroses are first discussed, then motor neuroses, and thirdly anatomical diseases of the peripheral nerves, which alone properly deserve the name indicated by the title.

The author, we think, properly considers pain to be, not a specific quality, but merely the effect of any undue intensity of centripetal excitation. All discussion respecting the essence of pain is idle so long as we remain in the dark respecting the true nature of the molecular processes accompanying normal or abnormal excitation of nerves and nerve centres. Though neuralgia is something essentially different from the sensory impressions caused by the immediate action of stimuli in nerves, we are yet in the dark respecting its true pathology. The author does not accept as satisfactory any of the theories as yet propounded to account for it. It is beyond the reach of mere anatomical or coarse pathology. The symptoms of neuralgia in general, and of the special forms of neuralgia, and of the various trophic and vaso-motor disorders accompanying it are well and fully discussed, and in the treatment special attention is devoted to electricity and its application.

In speaking of the treatment of sciatica, our author incidentally mentions the good results which have occasionally been seen to result from the application of the actual cautery to the external ear, and remarks that "our ignorance of its mode of action is no reason why it should be held up to ridicule." We quite concur in the sentiment, believing that well-founded empiricism often affords the most valuable clues to rational pathology and treatment.

Passing from neuralgia to anæsthesia, we find the various forms and causes fully discussed. The causes are divided into affections of the peripheral sensory organs, the nerve trunks, conducting paths of the cord of the brain, and lastly of true centric organs. Affections of the cortex, and especially those exemplified in certain forms of mental disease, the author looks on as proving the existence of sensory regions in the cortex cerebri.

In treating of the neuroses of special sense, Erb gives considerable attention to the neuroses of taste, and shows, we think, satisfactorily that the chorda tympani, considered as a branch of the facial, has no relation to taste, but that it receives branches from the lingual nerve, which again leave it and return to this nerve once more. The exact route of their return is uncertain, but that they do so, and do not continue their course to the roots of the facial is clearly established by cases which fully support the experiments of Schiff.

In discussing neuroses of motor nerves, considerable prominence is given to the methods of exploration of the motor apparatus, and more especially to electrical exploration.

The various causes of spasm or convulsion are fairly well considered; but to say that Nothnagel has demonstrated the existence of a special "convulsive centre" is more than we are willing to admit.

The existence of "pressure points" in certain convulsive affections, *i.e.* points, pressure on which either inhibits or excites spasm, is referred to, and is well worthy of further investigation.

In treating of writer's cramp and allied affections, Erb adopts Benedikt's classification into the spastic, tremulous, and paralytic forms. The pathology is still left in obscurity, and the treatment is equally doubtful. Though electricity may occasionally do good, the prognosis is distinctly unfavourable as yet.

As to the centric or peripheral nature of the affection termed tetany nothing definite is known. The various opinions which have been advanced are, however, all carefully reviewed.

On the important question of "contractures," especially those occurring in cerebral paralysis, the author finds himself unable to decide as to which of the views as to their causation he is to give his adhesion. He seems inclined to adopt the hypothesis advanced by Hitzig, that they are due to abnormal excitability of the centres of the associated movements which accompany even the simplest motion of the body. As regards their treatment Erb recommends galvanisation of the head as the most effectual.

The various causes of paralysis, peripheral, spinal, and cerebral, are fully and carefully discussed, and the methods of diagnosis of the seat, particularly by means of electrical exploration, are clearly set forth. On these points Erb has done good service by his own investigations, especially on the galvanic and faradic reactions of paralysed nerves and muscles.

Our space being limited, we cannot enter into further analysis or criticism of this work, but recommend it to our readers as one of the most valuable and exhaustive which has yet appeared, and fully abreast with all the most recent investigations.

A Text-Book of Electricity in Medicine and Surgery. By George Vivian Poore, M.D., M.R.C.P. London: Smith, Elder, & Co., 1875.

Dr. Poore has done good service in placing in the hands of students and practitioners an extremely concise and useful manual of instruction in a branch of therapeutics far too much neglected in this country. Indeed the most lamentable ignorance prevails generally, and that which, apart from its therapeutic nature, is one of the most important aids to diagnosis in diseases of the nervous system, is left largely in the hands of ignorant and pretentious quacks. No man who has any pretence to acquaintance with diseases of the nervous system can afford to be ignorant of that which in reference to nervous diseases is no less important than the stethoscope in diseases of the chest. Unfortunately in the great majority of works devoted to the subject there is a tendency to hypertrophy by the introduction of much irrelevant matter, and especially the accumulation of "cases" treated successfully, which tend to repel and confound the reader who wishes for clear and definite principles and rules.

Dr. Poore describes very clearly and succinctly the laws of electricity, the construction of batteries, the physiological effects of galvanic and induced currents on nerves and muscles, and shows how they are to be applied to the body in order to produce certain effects. The diagnostic uses of electricity are briefly but very well laid down. In treating of the therapeutical applications of electricity Dr. Poore discusses it first as a stimulant, giving illustrative cases, and next as an anodyne or sedative. The distinction is a purely hypothetical one, and we do not see any need for encumbering the subject with questionable generalisations borrowed from empirical therapeutics. Dr. Poore must have had very simple readers in his mind's eye when he wrote "there is no relation, etymological or otherwise, between *anode* and *anodyne*." Very useful chapters are devoted to the electric cautery and the electrolytic treatment of tumours and aneurisms. We wish all success to the work, for it has many excellences.

Clinical Lectures on Diseases of the Heart and Aorta. By GEO. W. BALFOUR, M.D., F.R.C.P., Physician to, and Lecturer on Clinical Medicine in the Royal Infirmary, Edinburgh. J. & A. Churchill, 1876, pp 424.

DR. BALFOUR has been long and favourably known as a steady worker at the diseases of the circulatory organs. Many, if not all, of the chapters of his book have already appeared in the columns of the *Edinburgh Medical Journal*, and therefore most readers are more or less familiar with his views. Dr. Balfour is strongly inclined to think for himself, and is decidedly competent to do so; and if one cannot always thoroughly agree with him, nevertheless one cannot help feeling that his arguments are well put and his reasoning cogent. His book is not exactly the one we would recommend to beginners of the study of heart disease, as being scarcely sufficiently systematic; but it is a work which is eminently suited for the careful perusal and study of those who are already somewhat familiar with the subject-matter. After a preliminary chapter on diagnosis he plunges into the valvular lesions of the heart, which he has obviously carefully studied. The lesions of the aortic valves are first given, after which the mitral lesions are considered. Mitral stenosis receives elaborate notice, while the lectures on mitral regurgitation will furnish much that is new to many readers. Lecture VI. is devoted to "curable mitral regurgitation," where a systolic murmur "has its position of maximum intensity, not in the pulmonary area, but one inch and a half or more to the left of the left edge of the sternum in the second interspace," and "not over the pulmonary artery at all, but exactly over the spot where the appendix of the left auricle comes up from behind, just to the left of that artery." As to the proofs of this statement, the reader must consult the book itself. Tricuspid regurgitation, curable and incurable, engages the next chapter, after which follows the consideration of the murmurs audible in the pulmonary area. Lecture IX. is devoted to the variation and vanishing of cardiac murmurs. In Lecture X., on intermittency, irregularity, and palpitation, cardiac and aortic, we meet with the following sentence (p. 237). "Palpitation is merely the occurrence of abnormally rapid pulsation in the heart or in the aorta, most usually the abdominal aorta," a view perhaps all readers are not inclined to indorse. Then follows the consideration of the secondary results of heart failure, for which we are usually consulted rather than for the heart lesion itself; after which come angina pectoris, and other forms of cardiac pain, and then a lecture upon the diseases of the heart walls, pericarditis, myocarditis, and hypertrophy apart from valvular disease. We could wish Dr. Balfour to give us his views upon hypertrophy in valvular disease in the next edition, and we feel sure that he will have much that is interesting to say on this important matter. His views on the treatment of heart disease, and especially the indications for digitalis, are sound and trustworthy. Arsenic is a drug he sets great value upon. The final three lectures on malposition of the aorta simulating aneurism, and on aneurism and its treatment, are well worthy of careful perusal. The whole work is one which reflects much credit upon its author, and which firmly establishes his reputation as an authority on the important disease of which he treats. The Edinburgh School has always been famous for the number and capacity of its authorities on disease of the heart and aneurism, and among them Dr. Balfour takes a prominent if not indeed a premier position.

Sciatica, Lumbago, and Brachialgia, and their Relief and Cure by the Hypodemic Injection of Morphia. By Henry Lawson, M.D., Assistant-Physician to St. Mary's Hospital. J. and A. Churchill, 1877. Second Edition·pp. 228.

In this work Dr. Lawson has put clearly before the profession the advantages to be derived from the use of subcutaneous injections of morphia in the treatment of neuralgic affections. An enlarged experience corroborates what was said in the first edition. Of 180 cases, some very bad ones, in but few did this treatment prove a failure. Dr. Lawson does not assert that this plan "cures" the neuralgia, but "the agony must be kept under so long as it exists, and while this is done by injection the patient is increasing his appetite, and by means of the iron and cod-liver oil is getting up strength, which would not be obtained if constant pain and agony existed." Dr. Lawson gives careful details of every point to be attended to. The morphia should make a perfectly clear solution in a little hot water. The needles should be of steel, and not more than half an inch in length, as longer needles have no advantage and yet possess many drawbacks. It is not desirable to go too deep with the injection. By attention to these minor matters Dr. Lawson feels sure great relief may be afforded, and a cure rendered feasible in these painful maladies.

Clinic of the Month.

Eucalyptus Globulus as a Cure for Ague.—Dr. John Curnow observes, that whilst there is an almost complete unanimity as to the advantageous effect of the cultivation of the eucalyptus tree in the removal of the malarial fevers from marshy districts, foreign observers differ greatly in their estimate of the value of its preparations in the treatment of these diseases, and very few, if any, trials have as yet been made of them in this country. The experiments of Fichter at Basle, and of Hertz at Copenhagen, gave almost negative results; whilst those of Groos in Hungary were extremely favourable. Further investigations are required to clear up these discrepancies, which are doubtless due to the difference of the preparations made use of, and the varying doses in which the drug was exhibited, as well as to the length of time that the disease had existed, and perhaps also to the place of growth of the trees from which the preparations had been made. Hertz thinks that old cases will yield better results than new ones, but that recent ones are sometimes very speedily cured by this drug is sufficiently evident from the notes of the two cases which Dr. Curnow gives. The cases came under his care whilst he undertook the temporary charge of the patients at the Seamen's Hospital for his friend Dr. Harry Leach. His successful results are the more important because when he prescribed the eucalyptus he was very sceptical as to its value; for, with the exception of the chinchona alkaloids and arsenic, he had always before observed a signal failure of the numerous alleged remedies for intermittents. Amongst these were the sulphites of magnesia and soda, salicin, sulphate of beberia, picrate of potash, &c., and they had all been administered most freely. Moreover, both patients were under observation for some days before the medicine was exhibited, in order that the severity of the cases might be properly estimated, and that no fallacy might arise from the spontaneous subsidence of the disease, as occasionally occurs from a change of residence. The preparation of eucalyptus that Dr. Curnow used was the tincture made by Messrs. Savory and Moore, and, except an agreeable feeling of warmth in the mouth and pharynx, no appreciable effects but the rapid cure of the fever were noticed.

Oil of Turpentine in Sciatica.—Dr. Jamieson read a paper on this subject before the Medico-Chirurgical Society of Edinburgh (January 3, 1877). He stated that he regarded cases of sciatica as divisible into three classes, viz. :—1. Those cases in which the sciatica was due to peripheral irritation of the sacral plexus, generally in branches near the genital organs. 2. Those cases occurring at the age of tissue degeneration ; and 3. Those cases dependent upon a specific poison, either gouty or syphilitic, or some other. In cases due to the cause given under the second head, he had had great success with oil of turpentine, so that in ten out of eleven cases a cure had been effected. The turpentine required to be given in two drachm doses, with castor oil, mucilage, and cinnamon water, and repeated three or four times. In the discussion which followed, Dr. Young thought that the best remedy he knew was iodide of potassium pushed to iodism. He had obtained excellent cures by the use of acupuncture. Dr. Muirhead, after trying the turpentine plan without effect, had injected chloroform in five-minim doses, which relieved the plan almost immediately, but produced a feeling of numbness that lasted for a long time. He had found the use of acupuncture-needles gave great relief. Dr. Balfour thought turpentine could not in any way be regarded as a specific for sciatica. In the last case he had treated the remedy he had found most effective was quinine in large doses. He completed the cure by large doses, up to thirty minims, of liquor arsenicalis. (*British Medical Journal,* March 31.)

Goa Powder as a Remedy in Skin Disease.—Dr. Balmanno Squire states that his interest in the Goa powder has recently been revived by a patient from China showing him the effect of the powder on himself. The peculiar kind of inflammation of the skin produced by the powder convinced Dr. Squire that he had under his notice an active agent capable of producing an effect on the skin different from that of any other irritant that he knew of. The chief constituent of Goa powder appears to be chrysophanic acid, of which it contains from 80—84 per cent. It also contains a little resin. The effect of the powder or of chrysophanic acid, with both of which Dr. Squire has experimented, on the healthy skin is usually *nil ;* and even when applied to a raw surface its effect is very slight, though occasionally in certain individuals, and especially in children, it seems to produce a dusky inflammation of the parts adjoining that where it has been rubbed in. The remedy appears to him to be valuable, not only in cases of psoriasis, which is in itself a sufficiently common form of nonparasitic disease of the skin, but also in the equally common "lichen circumscriptus," or chronic lichen. In the latter disease, however, a weaker strength of chrysophanic acid ointment should be used than is proper for psoriasis. He has no doubt that, employed in a weak form, an ointment of Goa powder or of the pure acid would prove itself a valuable remedy in cases of pityriasis, and equally in cases of dry eczema. The manner in which he prescribes the remedy is in most cases as follows:—Recipe, Acid chrysophanici gr. x. ad gr. xxx. adipis ℥j. melt together for half-an-hour in an oil bath, stirring occasionally. When cold, mix together with pestle and mortar, adding, if desired, a few drops of essential oil to scent the ointment. (*Medical Times and Gazette,* February 10, 1877.)

Strapping the Breast to Diminish Suppuration after Abscess.—Dr. Martin, of Portland, states that he never recollects having had matter form when he had carefully strapped the breast in the earlier stages of inflammation, and that it may also prove very useful in the advanced stage of inflammation prior to the formation of matter, and after the evacuation of an abscess either by the lancet or natural process.

After matter has formed and the sac has been opened its effect in hastening recovery has been most satisfactory; instead of having a heavy pendulous breast becoming relaxed in a bath of its own pus, it is most comfortable to the patient to have the organ tightened up and supported, and the amount of secretion of pus is always diminished. Dr. Martin lately treated a rather unusual case in this way, where, in a woman aged sixty, an abscess formed behind the mamma, from which by puncture he had removed about 28oz. of pus. He introduced a drainage tube, and then compressed the whole surface with straps of adhesive plaster. The entire mamma was covered, save where the tube was inserted. Under this point was attached a small cupped sponge, which was frequently changed during the day, and in this way great cleanliness was maintained. Every third or fourth day he irrigated the cavity with a 1-to-20 solution of carbolic acid. He only changed the strapping twice in fourteen days; when the whole cavity was closed and the wound healed. He thinks that had he treated this in the ordinary way he should have made liberal openings, the patient would have been soaked in pus, and he feels sure that the cavity would not have been healed in three or four months. (*Medical Press and Circular,* March 28.)

Treatment of Catarrhal Jaundice.—Dr. Krüll, of Güstrow, Mecklenburgh, recommends enemata of cold water as an excellent remedy in this disease. One to two litres of water at a temperature of 59° Fahr., which may be gradually increased to 72° Fahr., are to be slowly injected into the rectum by means of an irrigator once a day. The patient is to retain the water as long as possible. The first effect of this treatment is the rapid disappearance of oppression in the epigastrium, as well as of nausea and headache, the appetite also quickly returns. In half of the cases thus treated (eleven in all) the fæces were tinged with bile after the second injection; and in the cases of longest duration, in one of which the disease had lasted for more than a year, their normal colour returned not later than the fourth day. The largest number of injections used in any one case was seven. Most of the patients had previously been treated unsuccessfully by the ordinary methods. Dr. Krüll explains his results on the supposition that the cold water not only increases the peristaltic action of the bowel, but also excites sufficient contraction of the bile-ducts to enable them to overcome the obstacle due to catarrhal swelling or inspissated mucus at the entrance to the duodenum. (*Berlin klin. Wochenschrift,* No. 12, 1877, and *Medical Times and Gazette,* March 31, 1877.)

Progressive Pernicious Anæmia Successfully Treated by Immediate Transfusion.—Dr. T. R. Glynn, of Liverpool, gives the details of a case of pernicious anæmia occurring in an engineer æt. forty-two, who had followed his occupation on board ship for twenty years, and who had never had ague or any other serious illness. He had become pale and thin for the space of fourteen months, and had recently been compelled to give up work. On admission into the infirmary he was found to be anæmic and emaciated, his pulse 90, respiration hurried, tongue clean; urine sp. gr. 1012, without albumen; splenic dulness increased, loud systolic murmur over base of heart, impulse not displaced. Examination of the blood showed the red corpuscles diminished in number, the white not increased. The patient complained of weakness, frontal headache, dizziness, impairment of vision, and heavy numbness of fingers, loss of hearing, &c. He was ordered quinine and iron and a liberal diet containing eggs and port wine. No improvement resulting, the treatment was changed to phosphuretted oil, one-thirtieth grain of phosphorus being given after meals as well as the iron between meals. The phosphorus appeared to irritate the stomach, and was given up. Dr. Glynn then determined to transfuse. A healthy man was selected and placed on a bed by the side of the patient, their right arms being close together. Aveling's instrument was used; it was filled with a warm saline solution, the veins were opened, the canulæ inserted, and held by assistants. Between eighteen and twenty ounces were injected. The operation lasted about thirteen minutes, and was continued till the patient complained of some uneasiness and oppression of the chest. His pulse gained in strength and volume. Steady improvement set in, and in three weeks he was allowed to go out of doors. In a postscript Dr. Glynn says that, having left the hospital, a relapse took place, and he unfortunately did not return to have the transfusion tried again. He died about two months after the operation. (*Lancet,* March 31, 1877.)

Note on the Connection between Eczema and Diabetes Mellitus.—Dr. Braxton Hicks, in a paper read before the Medical Society, called attention to the frequent association of eczema, especially of the vulva in women, and the orifice of the urethra in men, and diabetes. The eczematous condition is apt to extend into the groin and lower portion of the abdomen, far away from the contact of the urine. He thinks both the diabetes and the eczema are both dependent on neurotic conditions. The treatment he has employed has been the usual avoidance of those articles of diet likely to increase the amount of sugar, through not carrying the restriction to excess. He has generally given codeia twice daily, which he has found to exert a decided effect over the irritation. He has also prescribed bark with arsenic and other tonics. (*Lancet,* March 31.)

Pain in the Chest of Obscure Origin.—Dr. J. Sherwood Stocker draws attention to a class of cases that are occasionally met with both in males and females, chiefly characterised by pain extending either round one or both sides of the chest, or round the chest and down the arm, without any apparent cause. After carefully eliminating all sources of error, as the possibility of pleurisy, herpes, aneurism, dyspepsia, and other disorders of the digestive organs likely to lead to an erroneous diagnosis, it will generally be found, Dr. Stocker thinks, that on one side of the upper dorsal vertebræ, near the exit of the spinal nerves, there is a spot exquisitely sensitive to pressure. In regard to treatment he finds that in most cases a simple blister applied over the painful spot, with tonics given internally, will suffice to cure the invalid. In other cases an opiate plaster with a tonic will be found to be the more appropriate remedy. In some cases, but not always, a history of an injury can be obtained. There is no connection between the pain and any functional uterine disturbance. (*Lancet,* March, 31, 1877.)

Treatment of Fistula in Cheek following Necrosis of Lower Jaw.—Fistula in the cheek is sometimes a very troublesome sequel to disease or injury of the jaw, and is not only often difficult to heal without operation, or the local application of caustics, such as the actual cautery, but is extremely obstinate, a very long time being often necessary to effect a permanent cure. The following case, as will be seen, was treated in a very simple manner, and completely healed in a short time.

A man presented himself in the out-patients room of a hospital with a fistulous opening in his face opposite to the lower canine tooth of the left side, through which the saliva flowed, and whenever the lower lip was moved the saliva passed out in jets. It appears that some years previously he had experienced some clumsy dentistry, and had as a result necrosis of the lower jaw, with an abscess afterwards, which opened through the face. On passing a probe through the sinus, which had the calibre of a crow-quill, it took an oblique course, nearly an inch in length, upwards and backwards. Mr. Bellamy adopted the simple expedient of introducing a small crystal of nitrate of silver into the sinus and leaving it there, as he has been in the habit of doing with troublesome penile fistulæ. At first the nitrate caused a considerable amount of discomfort and pain, but after two further applications of the salt, at intervals of a week, the canal healed completely, and a small depression was all that could be seen indicating the original position. (*Lancet,* March 31, 1877.)

Cutaneous Itching.—A correspondent of the *British Medical Journal* recommends the use of the following lotion for the relief of this exceedingly distressing condition. Acid hydrocyanici dil. ʒj., hydrargyri perchloridi gr. xvi., aquæ ad ℥viij. to be applied twice daily by means of a sponge. Or potas. ferrocyanidi one scruple, aquæ eight ounces; to be used as above. Mr. Ready, who has had several cases of cutaneous itching, says that the application to the skin, by sponging, of sulphurous acid, either diluted or at the full strength, has in every case had remarkably good effects. Dilute hydrochloric acid and chlorate of potash given internally are also useful auxiliaries. An old practitioner writes that a few years ago he suffered much from severe itching round the anus by night, and tried everything likely to relieve it, but to no purpose. He left off coffee, of which he drank a pint, made by himself, and therefore good, every morning for breakfast. He soon lost all the irritation, and has scarcely felt it since. (*British Medical Journal,* March 31, 1877.)

Extracts from British and Foreign Journals.

Salicylic Acid in Cholera.—Most favourable results have been obtained by the use of the salicylic acid treatment of cholera, which was introduced into India by Surgeon-Major Boustead, of the Bombay Army, some months ago. The remedy has been tried in Cashmere recently, and the natives prefer it to every other mode of treatment offered. In answer to correspondents, Dr. Boustead has replied that half a grain for each year of age of the patient is a safe dose to be administered by a non-professional person, but that this dose can be exceeded every hour, if administered under the supervision of a medical man. He adds that it occasionally requires the combination of a dose of opium, when vomiting and purging are very excessive, and that the acid, or salicylate of soda may require to be administered hypodermically. (*Englishman* and *The Times of India,* Sept. 30.)

The Treatment of Diphtheria.—Dr. G. R. Cook in treating cases of diphtheria states that he used to follow, without any favourable results, the rules laid down by the German Professor Oertel and others. He then adopted a different mode of treatment, which has been attended with much success. Upon recognising a case to be one of diphtheria, he at once orders a purgative, and prefers a saline. The circulation is much disturbed, the head and neck being very hot and dusky, while the feet are cold and clammy; he therefore next endeavours to restore the equilibrium by bathing the feet in water as hot as it can be borne, until they glow—in some cases repeating this hourly, and continuing to do so at intervals, as it may be necessary, for two or three days, at the same time towels wrung out of ice-water are applied to the forehead and throat, and changed as often as they become warm, which at first appears to be almost every minute. These he continues night and day, until evidences of local excitement are subdued. The patient is to use ice constantly during this treatment. The medicinal treatment he looks upon as of equal importance, and as a valuable adjunct to the cold. To eight ounces of a saturated solution of chlorate of potash, one drachm of hydrochloric acid is added, and a teaspoonful every three hours is given to a child of three or four years of age—the dose for children of six years and upwards being a dessertspoonful. In some cases this mixture is given alternately with salicine every two hours, as Dr. Cook believes that the latter, besides possessing antiseptic powers, promotes digestion. Sometimes the mouth is washed out or gargled with a solution of chlorinated soda, but with this exception no gargle is used. Stimulants and nourishing diet in a liquid form are given from the outset, and of course special symptoms must be treated as they arise. He does not know whether the cold destroys the microscopic organisms directly, or whether they cease multiplying and die because the action of the cold on the affected textures deprives them of support; but the latter he thinks is the probable cause, as after a few hours' perseverance in the treatment the mucous membrane becomes pale and bloodless, the patches cease to spread, the ashen hue turns to white, the breath soon becomes sweet, and a bright line of demarcation separating the affected from the non-affected portions may be distinctly seen to retreat and carry with it the crumbling edges of the patches, until all are obliterated. He has treated nineteen cases upon this plan, some being well advanced and severe, and in no instance has the disease lasted beyond seven days. Not one proved fatal, and only one showed symptoms of diphtheritic paralysis, from which, however, a perfect recovery was made. To strengthen what he has said, Dr. Cook adds that diphtheria proved very disastrous to some families in his locality, suddenly sweeping away all the younger members, notwithstanding all the efforts of the attending physicians. (*Canada Med. and Surg. Journal*, Nov. 1876.)

Treatment of Neuralgia.—Dr. E. P. Hurd, of Newburyport, Massachusetts, gives an interesting account of an intractable case of neuralgia that occurred in his private practice, in which a cure was ultimately effected, though not till after many remedies had been employed. The patient was a young woman, æt. twenty-four, the daughter of a gentleman in good circumstances, who had suffered from measles followed by otorrhœa, and at a subsequent period from typhoid fever, followed by temporary paralysis from dysentery, and from severe intercostal neuralgia. Opiates, Indian hemp, and other narcotics were successively given without much benefit. Paullinia powders (Guarana sorbilis) were given in twenty-grain doses with great advantage, and for four years she experienced almost complete immunity from pain. A visit to Boston caused a breakdown of the nervous system, and pain in the shoulder coming on, Dr. Hurd was called in. Paullinia was ordered without effect. A quarter of a grain of morphia, injected hypodermically and repeated in an hour, failed. Inhalation of chloroform caused a lull, and after free vomiting she fell asleep. A month later another attack supervened, affecting the shoulder, with tetanoid contraction of the scapular muscles and darting pains, extending to intercostal region. There were no well-marked *points douloureux.* Two hypodermics of morphia, one half-grain each, only served to intensify the pain; Squibb's ether was administered for forty minutes without causing relaxation or relieving the pain; but chloroform again brought rest, although no amount of it produced unconsciousness. Relapses continuing to occur, bromide of potassium was ordered in scruple doses, with subcarbonate of iron in half-teaspoonful doses; wine and brandy *ad lib.* In the next attack $\frac{1}{75}$th of a grain of atropia was injected hypodermically, and in subsequent attacks croton-oil liniment was rubbed along the lower cervical and upper dorsal regions of the spine; croton-chloral was given in five-grain doses, and ergot and bromide of potassium freely administered, the latter being subcutaneously injected in addition to various preparations of opium. The greatest attention was paid throughout to the nature and quality of the food and to the general functions of the body. Finally, the attacks seemed to be warded off by half-teaspoonful doses of the saturated tincture of gelseminum. (*New York Med. Record,* No. 315.)

Confectio Damocratis and Warburg's Tincture.—Dr. T. E. B. Brown, principal of the Medical School at Lahore, gives the following account of the preparation of the Confectio Damocratis, Mithridatium, Mithridate, or Damocrates' Confection, which forms one of the ingredents in Warburg's Tincture. London Ph. 1746. ℞—Cinnamon ʒxiv, Myrrh (Balsamodendron) ʒxi, Agaric, Spikenard (Nardus Indicus), Ginger, Saffron, Seeds of treacle, Mustard (Thlaspi Arvense) or Mithridate Mustard (Lepidium Campestre), Frankincense (Resin of Abies Excelsa), Chio Turpentine (Resin of Pistacio Terebinthus) of each ʒx. Camel's Hay (Juncus Odoratus), Costus (Costus Arabicus or Auklandia Costus or Aplotaxis Auriculata) or Zedoary (Curcuma Zedoaria), Indian leaf—Malabathrum folium (Cinnamonum Tamala) or Mace, French Lavender (Lavandula Stœchas), Long pepper, Seeds of Hartwort (Laserpitium Siler), Juice of the rape of Cistus (Cytinus Hypocistis), Strained Storax, Opoponax, Strained Galbanum (Ferula Galbanifera) Balsam of Gilead (Balsamodendron Gileadense) or expressed oil of Nutmegs, Russian Castoreum, of each ℥i. Poley Mountain (Teucrium Creticum), Water Germander (Teucrium Scorodonium), Fruit of the Balsam tree (Balsamodendron pubescens) or Cubebs, White pepper, Seeds of the Carrot of Crete (Daucus Creticus), Strained Bdellium (Balsamodendron Mukul) of each ʒvii. Celtic Nard

(Valeriana Celtica), Gentian root, leaves of Dittany of Crete (Amaracus Dictamnus), Red roses, Seeds of Macedonian parsley, Seeds of lesser Cardamonis, Seeds of sweet Fennel, Gum Arabic, Strained Opium, of each ʒv. Root of Sweet flag (Acorus Calamus), Root of wild Valerian (Valeriana Officinalis), Aniseed, Strained Sagapenum, of each ʒiii. Spignel (Meum Athamanticum), St. John's wort (Hypericum perforatum), Juice of Acacia, the bellies of Skinks (Lacerta Scincus or Psammosaurus Scincus) of each ʒiiss; Clarified honey three times the weight of all the rest, or about 128oz. Dissolve the opium first in a little wine, and then mix it with the honey made hot, in the meantime melt together in another vessel galbanum, storax, turpentine, and other ingredients of this kind, continually stirring them, that they may not burn, and when these are melted add the honey by degrees, lastly when the mixture is nearly cold, add the rest of the species reduced to powder. This confection was formerly reputed to contain the antidote for every known poison. This very complex formula consists of no less than 46 drugs with 5 other substitutes for them. Of these, 33 drugs are aromatic stimulants, and so are all the five substitutes, one, gentian, is a bitter tonic, and another, opium, a narcotic, but this is in such small proportion that it would scarcely have any effect. Thus there is only one grain of opium in 140 grains or a quarter of an ounce of the confection. It will be seen that there is a great similarity between some of the ingredients of this confection and those of Warburg's tincture. In both there are the following drugs:—Myrrh, Agaric, Gentian, Cubebs and Fennel, while the Angelica seeds of the tincture replace the Aniseed of the confection, and the Radix Heleni, the Costus root. The tincture, however, has Aloes and Rhubarb as well as quinine and spirit, and is altogether a more powerful preparation, but it would appear that the formula was constructed as an imitation of the Confectio Damocratis, with the addition of the above-mentioned drugs, and the omission of many of little value. He would be inclined therefore to recommend ginger and a small quantity of opium, as the substitutes for the preparation of Warburg's tincture instead of the benzoin, which he had formerly used, when he was unaware of its exact ingredients, and he would, therefore, use the following drugs in preparing the Indian substitute for Warburg's drugs, instead of Confectio Damocratis ℥viii. Take of Ginger ℥iii, and of Opium, grains xxxij. It is unnecessary to speak of the uselessness of so complex a preparation, but it is interesting to see how large a number of drugs were formerly used in one recipe. (*Indian Medical Gazette,* March 1st, 1877.)

Iodized Phenol—a New Uterine Escharotic and Alterative.—Dr. Robert Battey, of Rome, Georgia, gives two recipes for this substance:—1. Take of iodine one half-ounce, crystallized carbolic acid one ounce, mix and combine the two by gentle heat. 2. Take iodized phenol one-and-a-half ounce, crystallized carbolic acid one ounce, water two drachms, mix and make solution. Iodized phenol when applied to the cancerous uterus attacks the morbid growth with a fair degree of energy, destroying the superficial layers very satisfactorily. The applications are not at all painful when the sound parts are carefully protected. Hæmorrhage when present is easily arrested. The fœtor of the discharges is greatly diminished. The remedy is applied on lint or cotton which is saturated with it, and should be surrounded by a cotton tampon to protect the sound parts from the rather free serous discharge which usually takes place promptly after the contact of the iodized phenol. The application may be repeated in four to seven days. When it is desired to get rid of much fungous growth the deadened tissue is removed by the curette, and another application made without waiting for the separation of the slough. If it be wished to mitigate the escharotic, it may be diluted with glycerine to any desired degree. The second preparation above-mentioned has been largely tested by Dr. Battey in a variety of uterine disorders, as in chronic affections of the cervix and endometrium, uterine, hypertrophy, and subinvolution. It also may be mitigated by the addition of glycerine. In some cases he has used it of full strength, the fluid being simply painted over the mucous membrane. In other instances a lint has been inserted made of cotton saturated with preparation, and these have been allowed to remain for thirty-six or forty-eight hours. The pain of the application is very slight, presenting in this respect a remarkable contrast to the nitrate of silver, and this he attributes to the carbolic acid acting as a local anæsthetic allowing powerful caustic applications of iodine to be made. Dr. Battey states that under the use of the iodized phenol excoriations and ulcerations of the os quickly heal, leucorrhœa is arrested, endometritis gradually yields and disappears; the uterine hæmorrhages which so often attend upon subinvolution are controlled, and the uterus resumes its normal size and functions. Whatever may have been the strength of the applications stricture of the os and cervical canal never occurs. (*American Practitioner*, Feb. 1877.)

The Local Treatment of Puerperal Fever.—Dr. Heinrich Fritsch, of Halle, holding that the forms of disease included under the head of puerperal fever are due to the introduction of septic matter from without, and only acquire their specific character from their seat of origin, and from the peculiar condition of the generative organs existing at the time, recommends the systematic adoption of certain antiseptic measures, not only with a view to prevent infection by the hand of the accoucheur or midwife, but also to remove and destroy any decomposing secretions which may develop in the uterus itself. In the first place, before any examination is made, the hands are to be well washed with soap, and then scrubbed with a nailbrush and a solution of carbolic acid containing thirty grammes of the acid dissolved in three grammes of glycerine to one litre of water. All instruments about to be employed must be disinfected with carbolized oil. Before examination the patient is, if possible, prepared by a sitz-bath in which the vulva and perinæum are carefully cleansed with soap. The vagina is then washed out with carbolic acid solution, which renders it neither rigid nor rough. After the birth of a child attention must especially be directed to maintaining a free escape for the lochia. In the ordinary position of the patient, with the buttocks slightly depressed below the level of the surrounding portion of the mattress, the lowest part of the hollow of the sacrum is lower than the posterior commissure, so that the liquid has to collect and rise to a certain level before it can escape. To avoid the evil effects of this Dr. Fritsch injects a two per cent. solution of carbolic acid (salicylic acid having been found to be too feeble an antiseptic) at a temperature of 88° F., by means of an irrigator containing at least a litre of liquid, until the fluid returns perfectly colourless. For the injection of the uterus Fritsch finds the best form of catheter is one made of German silver, thirty centimetres long and six centimetres in circumference, and which has a curve somewhat greater than that of the midwifery forceps. He ordinarily irrigates thrice daily, at six A.M., one P.M., and eight P.M., while the vagina is washed out by the nurse every three hours. The latter proceeding should be adopted by every parturient woman, but the irrigation of the uterus need only be done after an operation, especially when the fœtus was dead and decomposed, and to cases in which liq. ferri perchloridi has been injected into the uterus to arrest hæmorrhage, and in which the formation of clots is an essential concomitant of the treatment; and lastly, in cases in which fever has existed for several days. The advantages claimed for this method of treatment are, that the vulvar aperture soon ceases to be painful and tender, œdema rapidly subsides, and wounds heal without the formation of a definite granulating surface, that the lochial discharge rapidly diminishes in quantity, that the uterus undergoes involution quicker than under expectant treatment, and that the temperature falls even after the first injection. (*Volkmann's Sammlung klin. Vorträge*, No. 107. Translated in *Med. Times and Gazette*, April 7, 1877.)

The Physiological Action of Salicylate of Soda.—The results of a series of investigations made by Dr. Danewsky show that the salicylate of soda exerts a very characteristic influence on the vascular system. In the first instance it augments the energy of the cardiac contractions, causing more powerful systolic movements and increase of the blood-pressure. In consequence of the action of the drug on the vagi the pulse frequency is sometimes greater, sometimes less than normal, and at a later period from the excito-motor cardiac nervous system becoming paralysed the pulse is weak. The augmentation of the blood-pressure is due partly to the greater energy of the cardiac contractions, partly to the direct stimulation of the vasomotor centres. This is proved by the fact that the blood-pressure falls after division of the spinal cord in the cervical region; whilst it rises on the injection of salicylate into the carotid artery, which causes the brain to receive a certain quantity of the remedy before the heart. There is an increased frequency of the respiratory movements due to irritation of the pulmonary vagi, and not to direct participation of the respiratory centre in the medulla. It is only after very large doses have been administered that the respiratory centre is gradually or rapidly paralysed and asphyxia is produced. In regard to the influence of the salt upon the temperature, which is of chief importance in a therapeutic point of view, it is very inconstant as well as inconsiderable both in healthy men and animals, but in the febrile state its action is powerful in both. The most probable explanation of its refrigerant powers he considers to be that in the febrile condition there is diminution of blood-pressure as a result of diminished cardiac and vasomotor activity, but when the salicylate of soda is given, it acts like quinine and digitalis in augmenting the blood-pressure and promotes the elimination of caloric. (*Arbeiten aus der pharmakolog. Laborat. zu Moskau*, 1876, Band i., p. 198.)

Elastic Compression by Sponges.—Professor C. Heine has for some time used compression by means of sponge in order to produce absorption in cases of chronic, serous, fungous, and deformative inflammations of joints, sheaths of tendons, and bursæ. He usually applies a plaster of Paris bandage, in which an opening is left at the point where pressure is to be applied. A piece of dry sponge, cut to the proper size, is then laid on the part, and compressed by a roller to about one-tenth of its thickness. The plan has, he says, been very successful in the above-mentioned affections; and he has also cured a very large cavernous angioma by elastic pressure applied in the same way. (*British Med. Journ.* March 31. From *Prag. med. Wochenschrift*, No. 32, 1876.)

Sunstroke.—Dr. Horatio Wood, of Philadelphia, thinks that the possibility of children having slight attacks of sunstroke is greatly overlooked, and has little doubt that many of the cases reported as cholera infantum, enteritis, &c., are really instances of thermic fever, and are curable by treatment as such. Cases of this character usually owe their cerebral symptoms either to intense exhaustion, to be treated by stimulants, or to intense fever to be treated by cold baths. Dr. Wood states that any one who has seen, as he did last summer, the child on whom drugs had ceased to act, and who was apparently doomed to die, relieved in twelve hours by enforced cold bathing every three or four hours, will give to Dr. Comegys the credit of having introduced one of the most life-saving improvements in infant therapeutics. The sudden sweet sleep after the bath replacing the fretful nights and days of unrest is a thing never to be forgotten when once seen, and the arrest of diarrhœa is certainly no less remarkable. As regards the treatment of thermic fever the early use of the ice-water bath is advocated, the bath being used just long enough to reduce the mouth to 100° F. After the bath Dr. Wood has found the hypodermic injection of quinine of great service in preventing a rise of temperature. With the subsidence of the first symptoms, headache, slightly increased heat, general distress, and sometimes mental incoherency supervene. These symptoms Dr. Wood believes to be due to a low grade of meningeal or even cerebral inflammation. He has found them yield in some cases very rapidly to free blistering of the back of the neck and head, aided by small repeated doses of mercurials. One great cause of the excessive mortality from sunstroke in hospital practice, is recognised in the length of time that is allowed to elapse between the onset of the disease and the use of the bath. In the Philadelphia hospitals and ambulances measures have been taken to obviate this danger. (*Cincinnati Lancet,* No. xii., 1876.)

Acetic Acid and Acetates in the Treatment of Cancer of the Breast.—M. Eugéne Curie states that he has obtained excellent results in the treatment of cancer of the breast, and also in that of the uterus and stomach by the employment of acetate acid or of the acetates. Under this treatment, he observes, the pains cease and the development of the tumour is arrested, or it may even diminish in size. He employs dilute solutions for external application, and internally the acetates of lime or soda, in doses amounting to thirty grains per diem. (*Revue Scientifique,* March 17, 1877.)

Remedy for Dandriff.—A French physician recommends that a solution of chloral hydrate containing five per cent. should be applied to the scalp by means of a sponge every morning. The quantity employed should be from one half-ounce to one ounce. A slight burning sensation and reddening of the scalp occurs, disappearing after two minutes. If the hair has fallen off in consequence of the dandriff, it will be renewed in about a month. (*Cincinnati Lancet,* vol. xix., No. 12.)

Action of Water on Healthy and Diseased Skin.—Professor Hebra sums up a memoir on this subject with the following observations:—Water is not an indifferent application to the skin, but exerts a considerable irritant action on it, which may either produce morbid states or modify those already present. It is not the temperature of the water, but its macerating and irritating properties which are the efficient part of the application. In prescribing water-dressing, baths, &c., the feelings of the patient should be followed with respect to temperature. Washing the body all over and bathing, whether in cold or warm water, are of no use as preservatives against affections of the internal organs, but often produce diseases of the skin. When baths are to be used with benefit in the treatment of cutaneous diseases they must always last a considerable time, an hour or more; and in cases which demand them, warm baths may be continued uninterrupedly night and day for months. (*London Med. Record,* abstracted by Dr. P. Smith, from *Wien. med. Wochensch,* Jan. 1877.)

Researches on the Secretion of Sweat.—B. Luchsinger in a recent paper shows experimentally the direct functional dependence of the sweat secretion on certain nerve irritations, and thus places the relations of this obscure process to the nervous system on the same footing as Ludwig, Bernard, and Heidenhain have done for other glands and secretions. Luchsinger's experiments were made upon cats. These animals under certain conditions begin to sweat freely on the under surface of their paws. If however one of the sciatic nerves be divided, or ligatured, no sweating occurs on this foot, whilst it continues to do so on the other three. Sweating on the injured side can however be induced by direct irritation of the divided nerve, and the effect can be produced ten or fifteen minutes after amputation of the leg. The sweating persists as long as irritation is applied to the nerve. The view therefore that sweating is a mere process of filtration becomes untenable; the view also that the act of sweating is a simple excretion of a preformed and stored-up fluid is equally unsatisfactory. Sweating must be regarded as a true process of secretion, and this function of the sweat-glands is directly connected with the excitation of certain secretory nerves—the sweat nerves. The nerve fibres possess no automatic activity. Their natural stimuli proceed from special central apparatus. Professor Luchsinger has made investigations to determine the seat of these nerve-centres, and the mode in which they can be excited, as well as the course of the sweat-nerves for the hind foot. If the spinal cord be divided in the middle of the dorsal region, and the animal be then placed in conditions which ordinarily excite the secretion, it continues to sweat in both fore and hind feet, but if the posterior segment of the cord be thoroughly broken down with a probe, the secretion is permanently arrested in the hind feet. The centre must therefore lie in this part of the cord. The sweat-nerves do not however run as might *a priori* be imagined, in the course of the muscular and sensory nerves of the lower limb. They do not proceed from the sacral plexus, proofs of which may be obtained both by the effects of stimulation and of section. They run in the cord of the sympathetic, and having issued from this join the sciatic nerve. They pass from the sympathetic by fibres proceeding to the first four roots of the lumbar plexus, as well as to the roots of the three last dorsal nerves. It is only when all these nerves have been divided that the sweat secretion is arrested in the foot, whilst irritation of any of the fibres can induce it. The modes in which the sweat-centres can be excited are just those that are in ordinary operation. In some instances peripheral stimuli and differences in the quality of the blood exert a great influence. The secretion is induced by psychical conditions, as anxiety; and Luchsinger has observed it to be occasioned by a peripheral stimulus in a colleague, in whom the use of pepper causes the formation of large drops of sweat on the forehead and bridge of the noise. Amongst the changes in the quality of the blood observed by Luchsinger to exert a positive influence on the secretion are dyspnœa, exposure to a high temperature, and the toxic influence of alcohol. These produced an increased secretion, even when the cerebral hemispheres had been removed to abolish psychical impressions, or when the cord had been divided, or the four cerebral arteries had been ligatured. (*Pflügers Archiv. f. Physiologie*, Band xiv., Heft 8.)

Notes and Queries.

NOTES AND CORRESPONDENCE.

SAWDUST DRESSING.—Surgeon-Major Porter, Netley, sends us a pad composed of sawdust derived from Memel pine, inclosed in a bag of light porous gauze. This application he has lately been using as a dressing where there has been a copious discharge of offensive pus, such as necrosis, psoas and other abscesses. He suggests it as a material for making pads for supporting stumps or pads for putting up compound fractures, and extemporised pads in field service. He has found it soft, particularly clean, agreeable to the patient, a good absorbant and powerful deodoriser (this latter quality being due to the large amount of terebene), and *very inexpensive.*

The dust is inclosed in a carbolized gauze bag, but any light gauze will answer as well. Between the pad and the wound a piece of oiled lint, with several holes cut in it, may be placed if considered desirable, but this is not necessary.

The best sawdust is that derived from Memel, but any dust derived from the pine species will answer.

In making a selection at the saw-mills, that obtained with a "frame-saw" will be found the softest.

Bibliography.

Die Hydrotherapie auf physiologische und klinische Grundlage. Von Dr. W. Winternitz. 1 Band. 8vo. pp. 238. 20 Helzsch. Wien: Urban und Schwarzenberg.

Grundriss der Pathologie u. Therapie der Syphilis. Von Prof. Zeissl. 8vo. pp. 336. Stuttgart: Enke.

Nervenpathologie u. Therapie. 2nd Thl. 1e Hälfte. Gehirnkrankheiten. Von Mor. Benedikt. 8vo. pp. 397–676. Holzsch. Leipzig: Fues.

Handbuch der allg. u. spec. Arzneiverordnungslehre. Von Prof. Bernatzik. 1 Thl. 8vo. pp. 401. 202 Holzsch. Wien: Braumüller.

Percussion d. Herzens. Von R. Lüning. Inaug. Diss. 8vo. pp. 46. 1 Steintaf. Göttingen: Peppmüller.

Diagnose u. Therapie d. Krankheiten. Von Dr. B. Kraus. 8vo. pp. 980. Wien: Perles.

Leçons sur les Affections de l'Appareil Lacrymal. Par F. Panas. 8vo. pp. 47. 1*s.* 6*d.* London and Paris: Baillière.

Propriétés Organoleptiques des Eaux Potables. Par E. Atgier. 8vo. pp. 63. 1*s.* 6*d.* London and Paris: Baillière.

De l'Exploration de la Sensibilité Acoustique. Par Gellé. 8vo. pp. 28. 1*s.* London and Paris: Baillière.

Dilatation Rapide des Rétrécissements de l'Urèthre. Par Bos. 8vo. pp. 69. 1 Litho. Plate. 2*s.* London and Paris: Baillière.

L'Étiologie et la Prophylaxie de la Fièvre Typhoïde. Par Gueneau de Mussy. 8vo. pp. 124. 3*s.* London and Paris: Baillière.

Lésions Organiques du Cœur Compensées. Par Baudin. 8vo. pp. 73. 2*s.* London and Paris: Baillière.

De la Symétrie dans les Affections de la Peau. Par Testut. 8vo. pp. 490. Woodcuts. 7*s.* London and Paris: Baillière.

Epanchements Pleurétiques par la Fonction Aspiratrice. Par Widal. 8vo. pp. 47. 1*s.* 6*d.* London and Paris: Baillière.

A Guide to the Examination of the Urine. Fourth Edition. By J. Wickham Legg, M.D. Fcap. 8vo. pp. 99. 12*s.* 6*d.* London: H. K. Lewis.

Alcoholism, the Various Forms of Alcoholic Delirium. By Dr. Victor Magnan, translated by W. Greenfield, M.D. 8vo. pp. 258. 7*s.* 6*d.* London: H. K. Lewis.

⁂ Any of the foreign works may be procured on application to Messrs. DULAU, of Soho Square, W.C.; WILLIAMS and NORGATE, of Henrietta Street, Covent Garden, W.C.; or BAILLIÈRE, of King William Street, Charing Cross.

Department of Public Health.

SEWAGE DISPOSAL.

In the summer of 1875, the Local Government Board instituted an inquiry into "the practical efficiency of the chief systems of sewage disposal now in operation, and for which loans had been sanctioned by that department." For the purpose of the inquiry a Committee was appointed by that Board, consisting of Mr. Clare Sewell Read, M.P., the Parliamentary Secretary, a gentleman who, besides presumably having an exceptional acquaintance with the administrative difficulties of the subject, brought to the investigation the knowledge of a thorough agriculturist; Mr. Robert Rawlinson, C.B., the chief engineering inspector of the Board, who for the past thirty years at least has had to give responsible attention to the subject; and Mr. S. J. Smith, of the engineering department of the Local Government Board, who as secretary to the late Rivers Pollution Comission was largely versed in the various methods of sewage disposal or use in the kingdom. This Committee was instructed that in pursuance of the inquiry for which it was formed attention should mainly be given to the following points:—

1. The nature and character of the works and their actual cost; the ratable value of the district, and the population for which the works are available. 2. The length of time during which they have been in operation. 3. The effect of the works on the sanitary condition of the district, so far as it can be ascertained generally. 4. The efficiency or non-efficiency of the works as a means of disposing of the sewage of the district, and the quality of the effluent water in relation to its purification and deodoriza-

tion. 5. Whether any nuisance is or has been occasioned by the works. 6. The annual outlay required for their maintenance and working, as distinguished from repayments of principal and interest, which should be shown separately. 7. In the case of sewage-farms, the acreage, description of soil, system of cultivation, the kind of crops, and the financial results. 8. In other cases the amount realised by the sale of sewage. The Local Government Board further suggested that at least four examples of each system of sewage disposal examined should be included in the inquiry, that each example should be reported upon separately, and that the several reports should be accompanied by a general report.

The report of this Committee, apparently so well constituted to deal with the administrative, agricultural, and engineering aspects of the question of sewage disposal, has now been published. This report, although it contains much that is highly perplexing, and which it is to be feared will detract from its real merits, is, as was to be expected, of peculiar importance with reference to the particular subject of the Committee's inquiry. We say the particular subject,—that is to say,—the subject as limited by the Local Government Board's instructions, —for the Committee has discursively introduced other questions into their report, and expressed opinions upon them, as will presently be seen, which do not appear to have been contemplated by the Local Government Board in the inquiry, which are largely irrelevant to it, and for which no data are given in the report.

Let it be premised here that the Committee visited twenty-four towns in England and Scotland where sewage-irrigation is practised; one town where sewage is disposed of on the downward intermittent filtration system; nine towns where the sewage is treated by chemical process, or is clarified by lime; and four, including Rochdale and Manchester, where "the pail-system is partially used for dealing with excreta." The Committee also visited Leyden and Amsterdam to inspect Liernur's pneumatic system in operation; Paris, where a portion of the sewage is utilised by irrigation; and Brussels and Berlin, where the sewage is about to be disposed of by irrigation.

Differing from the ordinary run of reports, this report has the peculiarity of beginning with its proper end, in other words, it is introduced and prefaced by the conclusions at which the Committee has arrived in the preparation of it. These conclusions are nine in number, the last five of which alone have reference to the proper subject of the inquiry. Taking example from the Committee, and reversing the ordinary method of procedure, we shall deal with these later conclusions first, and with the portions of the report relating to them, so far as is needful for a medical journal. The conclusions thus referred to are as follows:—

> "5. That, as far as we have been able to ascertain, none of the existing modes of treating town-sewage by deposition and by chemicals in tanks appear to effect much change beyond the separation of the solids and the clarification of the liquid. That the treatment of sewage in this manner, however, effects a considerable improvement, and, when carried to its greatest perfection, may in some cases be accepted.
>
> "6. That, so far as our examinations extend, none of the manufactured manures made by manipulating towns' refuse, with or without chemicals, pay the contingent costs of such modes of treatment; neither has any mode of dealing separately with excreta, so as to defray the cost of collection and preparation by a sale of the manure, been brought under our notice.
>
> "7. That town-sewage can best and most cheaply be disposed of and purified by the process of land irrigation for agricultural purposes, where local conditions are favourable to its application; but that the chemical value of sewage is greatly reduced to the farmer by the fact that it must be disposed of day by day throughout the entire year, and that its volume is generally greatest where it is of the least service to the land.
>
> "8. That land irrigation is not practicable in all cases; and, therefore, other modes of dealing with sewage must be allowed.
>
> "9. That towns situated on the sea-coast, or on tidal estuaries, may be allowed to turn sewage into the sea or estuary, below the line of low-water, provided no nuisance is caused; and that such mode of getting rid of sewage may be allowed and justified on the score of economy."

It will be observed that in these conclusions, and as the result of this extensive inquiry, but *one unquestionable economical* method of disposal of town-sewage has been observed by the Committee, namely, the direct passage of the sewage into the sea or tidal estuaries; and that of the several methods of utilisation practised, profit cannot certainly be assumed of the best of them, to wit, irrigation, and that the most which can be said for this method by the Committee is that it is the *cheapest*, "*where local conditions are favourable for its application.*" The importance of these conclusions cannot well be over estimated, especially when it is remembered that Mr. Rawlinson has been one of the most enthusiastic and loyal supporters and promoters of sewage-irrigation, not simply as a cheap but as a *profitable* source of sewage-disposal, and has consistently given the weight of his great experience from the days of the General Board of Health to the publication of the present report in favour of this system. From the beginning, in fact, of systematic sanitary work in this country, this system has received the official stamp of approval.

The system has, however, but very slowly made way among the local authorities of the country, and the illustrations of it contained in the appendix of this report give a sufficient explanation why this should have been the case. In not a single instance, perhaps, have the grandiose conceptions of chemists as to the fertilising nature of towns-sewage been confirmed by experience ; and if, in a few instances, some apparent approximation to these conceptions has been furnished, the conditions under which they have occurred have been so exceptional as not to admit of realisation by the vast proportion of local authorities who have to deal practically with the subject. In fact sewage-irrigation has failed of the popularity sought for it, not so much from its own demerits as from the injudicious procedure of its advocates and the false light in which it has been presented to the persons who have to deal with the question responsibly.

Notwithstanding, however, the elimination of all allusion to profit from sewage-irrigation in the conclusions of the Committee, it would appear that there are certain circumstances under which some profit might be looked for, and sewage-irrigation be really a remunerative proceeding. What these circumstances are the last and most noteworthy section of the report tells us, and the last two paragraphs of this section we quote in their entirety. If the reader is unable to reconcile wholly the language which follows with conclusion No. 7 of the report, we are unable to help him. It is a misfortune of the report that the conclusions and the text do not always hang well together.

> "It may be quite true," writes the Committee, "that town sewage contains all the manure that most plants require, but as these elements of fertility are dispersed through a volume of water many times greater than any crop can absorb, and certainly much larger than it naturally requires, it follows that the manure is not presented to the plant in the most acceptable form. We have been also

assured by a gentleman of vast experience that the long continued application of sewage to the same land fails to produce the like beneficial effect as when it was first used. It therefore appears most desirable that the application of sewage should occasionally be supplemented with some solid manure. Cows are the most suitable and best paying animals for consuming the produce and manufacturing manure upon a sewage farm, and cows should always form the chief portion of its live stock. The successful management of animals, and the proper cultivation of crops under ordinary circumstances, require a fair amount of intelligence and experience ; but successfully to carry out all the details of these matters upon a sewage-farm, where there is so little to guide the practical farmer, and so much to confound his past experience and upset his previous calculations, is indeed a hard task. And as most sewage-farms are under the control of ever-changing town councils and local boards, whose members must as a rule be ignorant of practical agriculture, and whose theories upon the subject may be wild and visionary—is it surprising that such poor returns have hitherto resulted from the application of town sewage to the growth of crops ?

"Disappointment has, therefore, been expressed at the poor financial results of sewage-farms. Agriculture is never a specially lucrative business, and during the last few years it is probable that strictly accurate accounts would prove that very little profit had been derived from the ordinary cultivation of arable land. Farms to which town-sewage is applied have invariably many unfavourable circumstances to contend with. The rent, except where the local authority has land of its own, is certain to be extravagant ; the application of sewage is often too costly ; the management is frequently changeable and faulty ; and the prejudice against the produce of the farm is, in some districts, obstinate and widespread. But where a fair rent is charged for suitable land, the sewage is cheaply and regularly delivered, and a good market close at hand, there is no doubt that the return for capital judiciously expended upon sewage farms will produce a higher rate of interest than the money invested by the majority of tillage farmers throughout the country" (p. xxxvi.).

An important additional condition of such a result would, however, appear to be laid down in a previous section of the report, where the Committee, referring to good examples of sewage-farming where the sewage and the land are leased, adds :—

"and are worked independently by gentlemen of intelligence, who make such experiments as they think proper, and vary their modes of culture as best suits the sewage, the land, and the crops to be grown. There is also the incentive to make the most of the land, which is not always the case where a farm is managed through the intervention of a committee ; we therefore look for a fuller development of sewage-farming in this direction, namely, letting both sewage and land on favourable terms, under restrictions to purify the sewage and cause no nuisance" (p. xxxii.).

If this is the best to be said of sewage-farming in this country, under the most favourable conditions, after the much longer experience of it we have had than of any other system of sewage utilisation, is it to be wondered at that the hard-headed business-men who in the main constitute our local authorities have not taken very kindly to it? It may be reasonably assumed that their resistance to the blandishments of chemical theory as to the fertilising properties of town-sewage when utilised by irrigation has been based upon shrewd doubts as to the practical confirmation of the theory. Again, when the towns which are so fortunate as to have an outlet for their sewage into the sea or a tidal estuary are set aside, how many towns are there in Great Britain so circumstanced as to meet the conditions, not merely of successful but, in view of lessening the cost of sewage-disposal, reasonably good sewage-farming? They cannot be very numerous, and when it is remembered that it rests entirely with the local authority to determine in what manner it will dispose of its sewage, a large margin must be left of towns and villages where other systems of disposal than by irrigation must be and may be had recourse to. The Committee admits that sewage-farming "is not practicable in all cases," and that "other modes of dealing with sewage must be allowed." The phraseology shows a curious want of appreciation of the true magnitude and gravity of the subject, and this defect runs throughout the report. There can be no question of "allowing" a local authority to set aside a particular method of sewage-disposal which it is impracticable for it to carry out, or of which, as the law stands, the authority must be the judge of its feasibility and desirability. Certainly, as to public loans, for sewage works, the power of granting them rests with the Local Government Board, but it is not likely that the Board will interpret their functions in this department by a *doctrinaire* view of the question, and not by the principles of the Public Health Law. When, however, we turn to the Committee's report for information as to "the other modes of dealing with sewage which may be allowed," the conditions for sewage irrigation failing, we are left without guidance, beyond the vague statement, made in conclusion No. 5, that certain of the chemical modes of treatment of the sewage, "when carried to the greatest perfection, may in some cases be accepted." The report, in fact, resolves itself in this respect chiefly into a comparison between the respective purifying merits of certain chemical and precipitating systems of sewage-disposal, as compared with the purification of sewage by land filtration and irrigation, and not with respect to the necessities of the several districts in which the different systems have been adopted. Whatever may be the gain which we derive from the additional important knowledge which the Committee affords of the difficulties attending sewage-farming, and the clearer insight it gives us into the conditions for its success, it is to be regretted that it should have extended its observations beyond the strict limit of its inquiry, and introduced questions which could not be satisfactorily dealt with in it, and for some of which the Committee has displayed a curious inaptitude.

We have said that the Committee leaves us in the lurch as to any guidance respecting the "other modes" of sewage disposal which may be had recourse to, in the event of sewage-farming not being practicable; and it presents to us a picture of certain consequences of other modes, which suggests the gravest consideration, but which the report deals with as having little interest beyond a mere comparison of methods. We read of Birmingham being compelled to deal with thousands of tons of sewage-sludge by digging them into a large area of ground in the vicinity of the town; and of the sewage works of Leeds and other towns, cumbered with immense accumulations of chemically treated sewage-sludge, of little value as manure, and which it has been found impracticable to get rid of. Birmingham and Leeds, and we believe other towns similarly circumstanced, have to carry out their work of so-called sewage purification under the pressure of injunctions which, to obviate a private nuisance, not shown, we believe, to have exercised any injurious effects upon the health of any living thing, except fishes, and which has rendered necessary the deprivation of all the new houses built in the towns since the granting of the injunction of proper sewerage, and reduced them in their sanitary relations to the condition of houses which existed in towns before common sewerage was known. How long is such a state of things to be tolerated, and methods of sewage disposal to be practised under these circumstances—methods which, however costly, have no relations to the sanitary wants of great populations? What is to be the upshot of such a state of things? The Committee sees nothing here but an interesting experiment of sewage disposal.

Turn now to another aspect of the question. Here the towns just named will also serve to illustrate the point to which we would direct attention. One of the most notable features in the sanitary administration both of Birmingham and Leeds during the difficulties they have been exposed to with respect to their sewage-disposal has been the introduction of a pail-system of excrement-disposal. This is being steadily extended in Birmingham, and we believe also in Leeds. The chief object had in view in both cases, as in all other cases of the same kind which have come to our knowledge, has been to obviate in the simplest and most certain manner nuisance arising from what is understood to be the most dangerous element of sewage, to wit, the nuisance from excrement. The need of this abatement of nuisance in the towns in question cannot be questioned. The success as compared with the previous state of things, wherever the system has been adopted, is believed to be obvious both to the eye and the nose, and the local authorities have had recourse to this system, after prolonged consideration and study of the question, as that alone which in the present circumstances of the populations under their charge would best meet the wants of the portion of population to which it is being extended. Now upon this question the Committee comes in its conclusions to the following decision (See No. 2 ; we spare our readers conclusions 1, part of Nos. 2, Nos. 3 and 4, as they consist of the merest sanitary platitudes)—

> "None of the (so-called) dry earth or pail systems, or improved privies can be approved, other than as palliatives for cess-pit middens, because the excreta is liable to be a nuisance during the period of its retention, and a cause of nuisance in its removal ; and, moreover, when removed leaves the crude sewage, unless otherwise dealt with by filtration through land, to pollute any water course or river into which sewage may flow. We have no desire, however, to condemn the dry earth or pail systems for detached houses, or for public institutions in the country, or for villages, provided the system adopted is carefully carried out" (p. xii.).

Birmingham, Leeds, Rochdale, Halifax, can hardly be classed as detached villages, yet we find from the report that in each of these great towns, and others there mentioned, a "so-called" dry-system of excrement-disposal has been introduced, and is now being carried out; but the report gives us absolutely no information as to the circumstances which led to the introduction, and treats the question merely as a matter of sentimental comparison between a water-closet system and an improved privy system, or as an economical question as between other modes of sewage-disposal. Nay, more, from beginning to end of the report it *treats of the excreta as a no more injurious element of town-sewage than soap-suds or dye waters. All the vast accumulation of medical knowledge as to the relative importance sanitarily of the excreta to the other matters apt to be present in sewage is as entirely ignored in the report as if it had never existed.* Hence the very groundwork sanitarily of the pail system is misunderstood, and the observations of the Committee upon it become simply fallacious. When, however, the Committee describes the dry earth and pail systems in its conclusions as "palliatives" of cess-pit middens, and in the body of their report (p. 32) writes of them as having "largely increased local nuisances in proportion to the time of retention of the excreta before removal,"[1] we are equally unable to reconcile the report with the particular conclusion or with the most obvious evidence of the senses.

But this is not all. The Committee states that it visited Manchester with special reference to the pail system. Manchester is the second city in the kingdom, and at the time when the Committee must have been there it was engaged in the gigantic undertaking of introducing a pail system throughout the vast city. It must then have converted several thousand cess-pit middens into pail-closets, and it was pursuing these conversions at the rate of some 5,000 a year. Of the economical results of this great scheme we know nothing. It is sufficient for us that the Corporation continue it undoubtingly. Of the results as to abatement of excrement nuisance we can speak from repeated personal experience, and can state that *it fully equals, and in some important respects surpasses, that observed under like conditions of population among the best arranged towns having a water-closet system in the kingdom; and we venture to*

---

[1] "By the dry-earth system, the sewer system, the Rochdale pail system, or by any other of the patented systems, so far as known to us, the local costs have been largely increased, and the local nuisances also, in proportion to the time of retention of the excreta before removal; there is also inconvenience suffered by trespass on the privacy of the household" (p. xxxii.).

aver that the sanitary results obtained already by the system justify the whole cost of it.

Not a word of this immensely important experiment is given in the Report of the Committee, although it deals with the question of which it serves as the most prominent illustration.

Conditions of space limit us to the issues directly arising out of the conclusions of this report. And on nearly every page it suggests perplexing questions of fact and principle. When we read throughout the report of sewage when not utilised as being wasted—(as "waste of sewage into the sea" p. xiii; "a waste of sewage (which is manure) can only be justified when it would cost less to waste it *harmlessly* than to utilise it," p. xx.; "the water of Leith is wasted into the sea," p. xii., &c.)—the question arises, how can an economical process be wasteful? When we read also, "In all the so-called dry processes [of sewage removal] (which are not dry) there is with the excreta a considerable volume of urine and water. This is so in the pail system, and in every form of improved privy" (p. xviii.) we marvel to find that the Committee does not know that the so-called "dry processes" refer to *dry* processes of removal, by cartage say, as contrasted with the *wet* process of removal, to wit, by water, not to dryness or wetness of the contents of the pail. When we further read that "there is no record of any special outbreak of disease at or near the sewage farm" (p. xxi.), we ask with amazement what has happened to the records of the Medical Department of the Local Government Board, and how comes such an extraordinary statement to be written? But the particular Committee in such a matter cannot well be expected to be more enlightened than the Board which appointed it. For what is to be thought of a Board which can believe (see Instruction 3) that the "sanitary condition of a district" (as affected by a particular kind of works) can be ascertained generally "by a Committee composed of a farmer and two engineers"! The remark we have quoted indicates the very general nature of the information they got together on the subject of sewage irrigation in its relation to health. When again we read (xxvi.) that "stagnant sewage in covered sewers and tanks becomes dangerous to human health, though not to such an extent as the offensiveness may be taken to indicate," and on p. xxxi. "that sewage is injurious in proportion to its age and putridity," we are charmed with the elasticity of the Committee's belief, and think that the seven days' retention of excrement in a pail as contrasted with its retention for months in a cess-pit midden might have had the benefit of one or the other phase of belief. When, finally (for we must stop notwithstanding an unexhausted subject), we read that "a dairy and a sewage farm should, wherever practicable, be associated," the writers seemingly not having an inkling of the dangers attaching to such an association within the precincts of the farm, we can simply ponder in amazement that even a Committee composed as this Committee was can be so unconscious of the peculiar dangers attaching to such a suggestion. In the last dairy associated with a sewage farm we had an opportunity of visiting, we found the milk cans cooling, laid in the sewage fluid, mouth to stream, in the effluent water running from the irrigated land, as it flowed from the surface of the land, unclarified into the out-fall channel. The cans were removed in due time from the stream, rinsed with the sewage, and then the milk was poured into them.

Notwithstanding the various shortcomings of this report, we hope its appearance may prove a turning-point in the consideration of sewage-disposal in this kingdom. If the conclusions of the report as to the relative economical values of the different systems of sewage-disposal which actually came within range of the Committee's inquiry, and which they inquired into, be confirmed, there will be a chance of the public health aspects of the question (hitherto almost lost under its economical aspects) coming to the front. The Rivers Pollution Bill has gravely complicated the difficulties of the subject, but this very complication will, we trust, aid in compelling earlier attention to the very serious position in which the populations of some of our principal inland towns are placed by the present state of both the public health law and of the common law in respect to the question at issue, and which admits of the sanitary welfare of dense masses of people (as in Birmingham and Leeds) being sacrificed to practically the sentimental feelings of a few isolated individuals. If the report under present consideration incidentally contributes to bring about a better state of public and legislative opinion on this subject, it will have done a good work. We shall recur to this subject.

ON DISEASES AND HYGIENE OF WORKMEN IN THE MANUFACTURE OF ARTIFICIAL FUEL FROM PIT-COAL AGGLOMERATED WITH DRY PITCH.

BY DR. A. MANOUVRIEZ,

Laureate of the Academy of Medicine of Paris.

TRANSLATED UNDER THE DIRECTION OF THE AUTHOR, BY F. J. BROWNFIELD BATEMAN.

(*Continued from p.* 320.)

Thus it will be seen there was penetration of the epidermis and of the subcutaneous adipose tissue by fragments, and infiltration of the epithelial and adipose cells with granulations of a substance which was nothing but pitch itself. In order to prove this, some pitch reduced to an impalpable powder, was examined under the microscope, and shown to be composed of irregular, opaque, black and brown fragments, absolutely identical with those observed in the interstices of the epithelial and adipose cells, together with other yellow fragments, showing the same transparency and the same colour as the granulations and the globules deposited within these structures.

It will be observed how much the anatomical characters of this melanodermy differ from those of the melanodermy symptomatic of Addison's disease, caused by the accumulation of pigment cells in the mucous layer of the skin. Suffice it to say, that the simple fact of the infiltration of the adipose cells with yellow transparent globules, would be sufficient to distinguish the melanodermy of pitch from all other kinds of cutaneous melanopathies. Moreover, as we have already stated, the discoloration of the skin, independent of any cachexia, is met with in almost all the workmen of agglomerated coal, even when in perfect health.

With this melanodermy we would compare the partial melanodermy of workmen employed in melting bitumen for the paving of streets and footpaths,[1] also the yellow colour of the skin on the workmen at the establishment adjoining Saint Vaast, who are employed in distilling coal-tar for the extraction of mineral oil (Case VI.); the earthy yellowish complexion of gas-makers, especially those working at the refinement; the melanodermy caused by the absorption of aniline; and, lastly, the yellow colour of the skin observed in patients to whom it was formerly thought desirable to administer picrates internally.

The subject of the preceding observation felt whilst working severe shooting pains in the skin of the face, a symptom that is common to all agglomerated coal-workers, loaders and cellarmen. These severe shooting pains are exasperated by the heat of the sun or of the stoves, which, by melting the pitch, favours its penetration into the tissues.

In these patients, there are frequently developed different cutaneous eruptions accompanied by itching; large pustules having their seat in preference on the face and neck, and which harden into tubercles, or furnish a fetid suppuration, and leave indelible pearly scars as in small-pox (Cases IV., V., VI., VII., X.); furuncles, especially on the nape of the neck; universal prurigo (Case XI.); psoriasis of the limbs on the parts corresponding to the extensor muscles (Case IV.); and, finally, warts on the neck, the shoulders, the face, and the hands. (Cases V., VI., X.)

These cutaneous symptoms of workmen handling pitch, resemble accidents occasioned by the local use of carbolic acid; the pruriginous pustules, anthrax, and warts on workmen in coke-kilns and on gas-workers employed in refining, and also the furuncles, warts, and special eruptions of coal-miners.[2]

---

[1] In a clinical review of the melanodermy symptomatic of Addison's disease (*Gaz. des Hôp.*, June 19, 1875), Dr. Revillout relates an incomplete case of bronzed disease, under the care of M. Hayem, at La Charité, the subject of it being a man, aged 21, employed in melting bitumen for paving streets, who had, on divers parts of the body, and especially on the wrists, some large brown stains which he attributed to the smoke of the bitumen.

The absence of any special cachexia, the essential characteristic of Addison's disease, leads us to suppose that the melanodermy in this case was analogous to that of artificial fuel-makers. These two cutaneous melanopathies would even be identical, if it could be shown that the bitumen handled by the patient at La Charité was a mixture of pitch and chalk, an artificial bitumen which is being more and more substituted for natural bitumen, in making foot-paths.

[2] Dr. Lespian (*Annales d'Hygiène*, 1859) has observed in the stokers of the

The general thickening of the skin and the warts showed a tendency to papillary hypertrophy; moreover, agglomerated coal-workers are frequently affected with *cancroid*, a variety of papillary epithelioma usually occurring on the scrotum. Hitherto, the cancroid of the scrotum has only been met with in the cellarmen.

Case II.—A cellarman for five years.—Papillary epithelioma of the right scrotum of six months' duration.—Extirpation by linear constriction.—Microscopical examination.—Cure in twenty-three days.—No relapse after more than a year.

A cellarman, 55 years of age, employed for the last five years, melanodermic; attacked with chronic ophthalmia (conjunctivitis, keratitis and iritis), has, in July, 1874, on the right scrotum, near the root of the penis, a cancroid, having commenced six months' previously by a pimple, which ulcerated. This tumour is circular, flattened, with edges everted in the form of a cup, and has a villous ulcerated surface. Its tranverse diameter is forty-one millimetres, and the vertical thirty-four millimetres. It is the seat of prickings whilst working, and whilst under the influence of the heat which prevails in the cellar. The morbid mass seems to involve all the thickness of the scrotum, but is not at all adherent to the testicle. An indolent inguinal gland can be felt of the size of a nut. On the July 6th, we circumscribe the base of the tumour with Maisonneuve's constrictor. The linear constriction is properly effected at first, but when the pedicle is reduced to a diameter of half a centimetre, the iron wire breaks, and the section is completed with the bistoury. A few drops of blood only flow. The scrotum affected in all its thickness allows the testicle to appear through a circular opening a centimetre in diameter. The edges of the wound are united by two pins, and a twisted suture. Oleaginous dressing and a suspensory bandage.

A cut made perpendicularly on the free surface of the tumour, shows white hypertrophied papillæ, from five to seven millimetres in length, resting on a base half as thick. Under the microscope, these papillæ appear to be formed by flattened epithelial cells, with one small nucleus, and by large spherical epidermic globules, composed of cells concentrically imbricated around a central granular mass; we observed two of these latter corpuscles closely joined to each other. These are the characters of papillary epithelioma.

The evening of the operation and the day following, there is pain in the spermatic cord, radiating into the groin, fever and shiverings, but no headache. The next day, a perceptible improvement, the local swelling is slight, and there is but little suppuration, and all pain has ceased. Pulse 60. Temperature 100·4. Dressing with lily petals preserved in alcohol. The wound was healed twenty-three days after the operation. There had been no relapse after this patient had resumed his occupation for upwards of a year.

---

steam-engine that works the moulding-press at the agglomerated coal-works at Quaregnon, in Belgium, obstinate ulcers, principally on the face and hands, attributed to the emanatious from the stoves, and which healed shortly after cessation from this kind of work. Moreover, a fireman of a steam-vessel, from burning agglomerated coal, was affected with pimples and obstinate ulcers, which healed as soon as he accepted employment on a steamer where pit-coal only was consumed.

It is interesting to note how feeble was the local and general reaction following the operation. Moreover, it is a peculiarity common in all artificial fuel-makers, to bear well injuries and surgical operations.

I have met with two other cases of cancroid of the scrotum, in one instance having its seat in the right scrotum, as in the preceding observation (Case XI.), and in the other case the disease was in the left scrotum, of which these are the particulars :—

Case III.—A cellarman for eight years.—Cancroid of the left scrotum of one year's duration.

At the end of the year 1874, I saw a workman at the manufactory of agglomerated coal, fifty years of age, a cellarman for eight years, and who had on his left scrotum a cancroid resembling in appearance and size that of the preceding observation. About a year before, the disease began by a little pimple, which ulcerated, and which continued to grow progressively. He had besides an ulcerated tubercle on the left half of the lower lip which seemed to be a cancroid beginning. The patient had ophthalmia four years ago, and the left eye was still the seat of amblyopia. The skin was bronzed like that of other cellarmen. I did not see this patient again.

This man, as I have before said, seemed to have a commencing cancroid on the left of the lower lip. On the loader, who is the subject of the following observation, it was on the right half of the lower lip that a papillary epithelioma settled, the commencement of which dated from a month only. The epthelial cancer of agglomerated coal-makers can therefore have its seat on the face.

CASE IV.—*Loader for five years.—Papillary epithelioma on the right half of the lower lip of a month's duration.—Excision combined with cauterisation.—Microscopical examination.—Cure in twenty days.—No relapse after a year and five months.*

A loader of coal lumps, 46 years old, five years thus employed, melanodermic, having psoriasis of the limbs on the surface corresponding with the extensor muscles, and liable to pruriginous pustules on the face, noticed for the first time towards the end of January, 1874, the presence of a small pimple on the middle of the right half of the lower lip, on the limit of separation between the mucous membrane and the skin. This insensible pimple, causing, at the most, some annoyance, has progressively developed to this day, the 23rd of February, when it presents the appearance of a small brown grizzly, cracked tubercle, about the size of a large lentil, and resting on an indurated base. On the labial mucous membrane behind this little tumour is to be found an ulcerated follicle, plainly visible with a lens. The hypertrophied lip is a little drooping. There is no glandular engorgement. This workman smokes, but his teeth, worn as much on one side as on the other, prove that the pipe is not more often in contact with the right than with the left side. The continuous progress of the disease alarms the patient, who implores an operation. I therefore at once remove the tumour with the bistoury by attacking it from behind at two millimetres beyond its apparent limits, and excising with great care a small tubercle of white lardaceous tissue. Two hours afterwards, the cavity of the wound is filled up with a piece of pâte de canquoin (a paste made of flour of chloride of zinc). In the middle of this tumour are seen five or six white hypertrophied papillæ, in which ramify numerous dilated capillary vessels. The top of these papillæ is covered with a tolerably thick layer of flattened epidermal cells; they rest on a basis of a granular appearance. Under the microscope the papillæ seem to be formed by flattened epidermal cells, separated easily from one another, of an irregular shape, and furnished with a bulky nucleus; we have not found epidermal globules.

The following day, the 24th, the cauterisation having reached the bottom of the wound up to about two millimetres in depth, the rest of the caustic paste is taken off. Inflammatory peripheric swelling. The pains arising from the cauterisation abate on the 25th, they appear again on the 26th, accompanied with ganglionic engorgement. On the 27th, the pains have entirely subsided, and twenty days after the operation the cure is complete.

There has been no return of the disease after the lapse of nineteen months, although this workman has resumed his old occupation.

In the following case, the cancroid began on a level with the left naso-genal fold, and extended to the cheek and to the half of the same side of the upper lip.

CASE V.—*Cellarman for thirteen years.—Cancroid on the right cheek and on the corresponding half of the upper lip of six months' duration.*

On the 15th of April, 1875, an agglomerated coal-maker, 60 years old, employed as a cellarman for thirteen years, comes to consult me about a cancroid on the face. His usual health is good. The face is covered with numerous pustules, leaving behind them white scars, indelible, like those of small-pox; some of these scars are met with on the body. Warts on the back of the left hand. Melanodermy predominant on the bald head, where it assumes the shape of a yellow cup, plainly circumscribed. In the right ear is a black spot a centimetre in diameter. There is besides chronic conjuntivitis subject to exacerbations. Six months ago there appeared in the left naso-genal fold a big pimple, which ulcerated and soon attacked the cheek and the half of the same side of the upper lip. Excision had already been attempted three times, the last occasion six weeks ago. At the present time there remains an ulcerated epithelial tumour as large as a crown piece, with an irregular base, in the shape of a cup, with callous and projecting edges, reaching as far as a centimetre from the labial mucous membrane, on the free edge of which is found a small warty tumour of the size of a large pea. This cancroid has never been the seat of any pain.

As the patient was shortly afterwards removed from the cellar and placed in a position where he was no longer exposed to pitch-dust his cancroidal tumour subsided; but in June 1876, after having for one day replaced an absent cellarman, the scar reopened, and in the beginning of July the cancroid had almost attained the same dimension as in the preceding year, with this difference, that now it was rather an ulcer than a tumour. Under the influence of lotions and dressings with the tincture of eucalyptus globulus, in a month the wound was a little filled up.

We shall see that the subject of Case VI. was affected with cancroids on the back, neck, and scrotum, which were removed by crucial incisions, followed by repeated cauterisations with liquid ammonia.

With the cancroid of agglomerated coal-makers I would compare the chimney-sweeper's cancer, or the cancroid of the scrotum caused by the irritating contact of soot, a disease described first by the celebrated Percival Pott,[1] and which other English surgeons, Earle, A. Cooper, and S. Cooper had subsequently observed. Moreover, this cancroid attacks in preference the scrotum, in whose folds the soot lodges; A. Cooper has also twice seen it appear on the face.

It is scarcely necessary to point out the analogy, not to say the identity, of the causes of these two epitheliomas; coal-soot actually contains empyreumatic products of the same nature as pitch. Besides, it has been remarked as a striking peculiarity in chimney-sweeper's cancer, that it seems to develop itself chiefly in England, and that it has only been observed in France in very rare instances. Is this because the chimney-sweepers in England are in contact with pit-coal soot, whilst in the greater part of France the soot proceeds almost exclusively from the combustion of wood? Moreover, all English coal is bituminous; in France, on the contrary, especially in the north, coal is generally poor in bitumen (hard coal, with small flame); the varieties which are a little bituminous, being reserved for industrial purposes, are rarely consumed on domestic hearths.

However this may be, the cancroid of artificial fuel-makers is caused by the contact of dry pitch, which, lodging in the folds of the scrotum (Cases I., III., VI., X.), or in the naso-genal fold (Case V.), becomes adherent, and penetrates as far as the derma, which it constantly irritates.

---

[1] P. Pott's Works, London, 1790, translated into French 1792.

(*To be continued.*)

THE PRACTITIONER.

JUNE, 1877.

Original Communications.

ON CHLORAL.

BY OSCAR LIEBREICH, M.D.,

Professor of Therapeutics in the University of Berlin.

It is not possible for the therapeutist any more than the chemist to regard with indifference the impurity, the inequality, or the sophistication of any of the substances with which he deals as objects of research, or as means of art. Thus a great and just interest attaches to the investigation of the purity of such substances as the vegetable alkaloids, quinine, morphia, &c.

Great pains have been taken, and still further researches are perhaps necessary, to determine the degree and manner in which the combination of analogous substances, or the defects of manufacture, affect the use of the vegetable alkaloids. Very considerable perfection of manufacture has, however, been attained in respect to these substances. The differential tests by which the purity of morphia, for example, is ascertained are not easy of application, but this is the less important from the medical point of view, because the presence of a very small quantity of papaverine or the other alkaloids of opium, for example, does not in any way counteract the effect of the morphine, nor interfere with its action. Small traces, therefore, are, from the therapeutical point of view, not likely to diminish the value of the drug. The same thing may be said of quinine, which may contain a very small quantity of the other alkaloids of the plant. Such traces may in a very minor degree affect the activity of the drug, but they do not do so appreciably, nor do they in any such case destroy or counteract the medicinal influence of the quinine. The case is, however, very different with substances which are the result of such operations of organic chemistry as change their internal composition. Thus Mathiessen and Wright have changed morphine into apomorphine by treating it with hydrochloric acid, and, having obtained it in a pure form, have ascertained that it possesses active and rapid emetic properties, which may be advantageously utilised for the purposes of medicine. Other experimenters have from time to time declared that they have found hypnotic effects to result from the use of apomorphine. The cause of their error has been, however, that the apomorphine which they employed has not been pure, but that it has been mixed with morphine. Thus we have here an example of an impurity which is of much greater importance than those which I have above cited, because it consists of a substance having an altogether different and even an antagonistic action to that of the apomorphine, and which distinctly reacts against and injures the therapeutical effect.

Here we have a very simple example of an injurious impurity. But there is another series of cases, which more particularly interest me at this moment, which do not offer the same facility of detection, and which are extremely important by reason of their frequency, their complexity, and their considerable therapeutical influence. I refer to the impurities which occur in certain chemical compounds of complex manufacture, in which the resulting foreign substances are often very numerous, not easily avoided, nor easily recognised. Thus in chloroform we know now what are the principal impurities likely to occur under ordinary modes of manufacture, as the pharmacopœia has provided a procedure intended to prevent them, and a list of tests by which they may be recognised. Chloroform ought not to blacken with concentrated sulphuric acid; it ought not to give a precipitate with nitrate of silver; it ought to have a boiling point of 140° F., and its specific gravity should be 1·49. Chloroform may, however, fulfil all these conditions; still it may be unfit for inhalation as an anæsthetic. Thus some time since some chloroform was forwarded to me by a surgeon who had found that it produced in several cases an unsatisfactory narcosis, and who had the misfortune to see a child on whom he was operating die under its influence. The chloroform responded satisfactorily to the pharmacopœial tests. I carefully redistilled this chloroform, and I found a small oily residue of about the same testing point, but of an abominable odour. I could not ascertain the precise nature of this residue; the quantity was very small, and it was probably compounded of more than one substance. By the process of redistillation the chloroform was purified, and thus purified it was employed with good effect. Without dwelling upon the subject of chloroform impurities, I pass to the pregnant subject of the prevailing impurities of the chloral of commerce and of pharmacy, a subject which is, in my opinion, one which is of very considerable importance; because I have good reason to believe that a large proportion of the chloral, both solid and liquid, which is at present employed in medicine is not trustworthy in respect to its purity. I am, moreover, well assured, and I wish to draw the attention of practitioners to this point, that many of the impurities of chloral, when it is not prepared with great strictness and tested with scrupulous accuracy, are of a kind seriously to detract from its uniformity of effect.

Such impurities are calculated to have both a directly and indirectly mischievous effect. Directly, because some of these impurities contravene the simply hypnotic and anæsthetic powers of chloral, and confer upon the so-called chloral with which they are mixed irritating and exciting properties; indirectly, because by rendering the chloral in certain cases feebly hypnotic, they render the practitioner or the patient uncertain of the proper dose, they lead to multiplication of doses, and, in consequence, they tend to produce fatal results. The comparative inertness of the first doses leads to the reduplication of the dose at too frequent intervals, until suddenly a fatal result is produced. The accidents which have occurred frequently in England are, I am satisfied, largely due to the impurities and uncertainty of the many preparations, and especially of many of the solutions in vogue. A study of the nature of these impurities is therefore just now imperatively called for.

Without entering on the history of chloral, we may remind ourselves that it was first discovered by Liebig in 1830. Liebig, however, was in possession of only extremely small quantities of chloral. During the thirty years which followed his discovery he had seen in all not more than thirty grammes; and most of those who wrote about chloral during that interval spoke of it as a substance which they had not actually seen. This was owing to the difficulty of preparing and isolating chloral. The method employed was to pass chlorine through alcohol in the cold to saturation, then to heat it slowly, continuing to pass chlorine through it, and then to distil it with concentrated sulphuric acid; the product was hydrated chloral; there were various methods of purifying this chloral, but the product was always a cake chloral, with very numerous impurities. *It is altogether impossible to purify this cake chloral.* It is however now known by what process to produce clearly crystallised chloral in dry transparent crystals, which are free from the impurities, these being held in solution in the mother liquor. Such crystals alone are reliable. Crystals of chloral hydrate which are not dry and transparent are not at all trustworthy.

In one of the most recent and justly reputed treatises of materia medica published in England, I find the characters of chloral described thus: "In colourless crystals (needles or acute rhomboidal plates)." I must, however, observe that *chloral hydrate in needles is quite unworthy of the confidence of the practitioner.* It may very well be, and is very likely to be, another chlorated substance, or very impure chloral hydrate. In America especially these impure forms of chloral hydrate are largely in favour, and everywhere there is a tendency to employ them where the consideration of relative cheapness in wholesale quantities is an element in the decision, and where the dangers of even apparently slight impurity in chloral hydrate are not adequately recognised.

Thus chloral hydrate which is not perfectly pure may sometimes be observed to become more acid. This increase of acidity is not due to the decomposition of the chloral hydrate itself, but to the decomposition of an accompanying impurity (chloro-carbonic acid) which sets free hydrochloric acid. When this occurs in the stomach it gives rise to great irritation, and I believe that when it occurs in the blood it causes great constitutional excitement. Hydrochloric acid is not in itself dangerous; but in these cases it is the indication of the existing impurities which give rise to hydrochloric acid by their decomposition, and which are, as clinical experience proves, in themselves irritating and dangerous. Thus if a physician make the experiment of giving a dose of pure chloral hydrate with a little hydrochloric acid, and of giving a dose of the impure chloral hydrate which produces hydrochloric acid by decomposition as I have mentioned, he will find a great difference; in the first cases, he will get the true hypnotic results of chloral hydrate; in the latter he will find symptoms of cerebral excitement and nervous irritation.

The effect of administering hydrochloric acid by the mouth and in substance is very different from that of administering impure compounds which will by decomposition produce it, or other analogous and irritating substances in the blood. In passing through the alimentary canal, it undergoes reactive changes and effects from the operation of the gastric and intestinal juices, and from the chemical influence of the fluids with which it is brought into contact before entering the blood, and before permeating the tissues, and affecting their intimate structure. Thus for example a large part of the hydrochloric acid will have been neutralised in the blood, and will take the form of chloride of sodium. A much more intense effect, however, and very often a very different effect, is produced where the toxic substance is produced by decomposition within the blood, and in direct contact with the tissues of the organism.

Radziejewsky has made a series of experiments with COS., oxysulphuret of carbon. He has found that it has an exceedingly poisonous influence on animals; and this effect is, I believe, due to the development in the tissues of sulphuretted hydrogen, which is the more poisonous under such circumstances because it is suddenly developed in small quantities throughout the organism and in contact with the tissues. A similar quantity of the gas inhaled would have no effect, because the exhalation and destruction of this body would then go on more rapidly than the absorption. I have found that if chloro-carbonic acid be administered in high doses to animals it causes death, producing a state of intense nervous excitement, followed by dyspnœa and fatal asphyxia. The pathological examination does not show any morbid changes which explains this death; but we must have recourse to pharmacological chemistry for an explanation.

The blood of living animals is alkaline, and this alkalinity is, so far as my observations go, constant during life, even in those diseases in which "acidity of the blood" is sometimes currently spoken of. It may be laid down, I think, as a law that the blood of any living warm-blooded animal is always alkaline, although there are different degrees of alkalinity in health and disease. Thus there is a higher degree of alkalinity in typhus fever, and a much weaker alkalinity in gouty rheumatic arthritis. I made for some years a series of researches on this subject, and in the Proceedings of the Chemical Society of Berlin I described a method of investigating the alkalinity of the blood, which is worth the attention of clinical observers as being the only clue by which those researches can be satisfactorily conducted. The reactions of litmus paper are not sufficiently delicate for this purpose. The colour of the blood globules resting on the paper obscures the reaction. But if small cakes of perfectly neutral sulphate of lime, coloured with litmus, be employed, when a drop of blood is placed upon such a plate, the liquor sanguinis is by the capillarity of the substance instantly absorbed and retained, and produces the characteristic reaction. The colouring matter of the blood resting on the surface may be washed off. Plates of china biscuit may also be employed, and with these plates delicate reactions may be registered, which differ from the coarser and less reliable results of litmus paper. Thus I have never found any instance in which the blood was other than alkaline; not even in leukæmia, in which the opposite has been asserted. The explanation then of the death produced by the administration of chloro-carbonic acid is to be looked for in the development of hydrochloric acid to which it gives rise in the blood, and its destruction of the alkalinity of the blood.[1]

The observations of Dr. Russell on the excessive alkalinity of the blood in typhoid fever have an extremely interesting chemical relation to the clinically observed fact that chloral hydrate is extraordinarily potent in its effects in that disease, and must be administered only in very small doses during the stages of excitement and delirium in the disease: its effect in such doses, however, being the more useful that opium is contra-indicated. Ten grains of chloral hydrate will often suffice to produce hypnotic effects, while in the stage of excitement of "delirium tremens" one or two drachms are necessary.

On the other hand I have seen cases of uric arthritis in which chloral hydrate in high doses produced great excitement without giving sleep; after a full course of alkalies the effect became very different, ordinary doses of chloral producing sleep without excitement. This is in accordance with the general law, which is now well established and tried. I have often had occasion to insist that the best effects of chloral are developed only in a normally alkaline state of the blood; that its effects are heightened when the blood is excessively alkaline, and are counteracted by the opposite chemical conditions.

It has happened to me more than once that my professional colleagues have brought to my notice cases in which chloral hydrate has produced considerable nervous excitement; the state of excitation combating and, in some cases, overcoming the hypnotic effect. In investigating them I found that the chloral employed was of the impure kind of which I have spoken. On opening the cork irritating fumes arose; it was acid, and contained certainly a good deal of chloral, but with it other compounds which give rise by their decomposition to acid and irritating substances of complex character, which have a very injurious physiological action.

I do not at all consider that all cases of excitement arising from the administration of chloral are necessarily due to impurity of the chloral; for imperfectly alkaline conditions of the blood

---

[1] By reaction on water, one atom of chloroform yields three equivs. of hydrochloric acid, and one equiv. of formic acid, which neutralises four equivs. of soda.

$$CHCl_3 + 2H_2O = CH_2O_2 + 3HCl.$$

may, as I have said, produce such effect and, finally, other causes also. I may mention also a curious effect of pure chloral which I have observed in several cases. It sometimes happens that if a person who has taken chloral takes alcohol at a subsequent repast, the superficial vessels become dilated, and there is great flushing of the face, as though an excessive amount of alcohol had been taken. I cannot explain this vascular dilatation; but in such cases it may be necessary for the patient to discontinue either the alcohol or the chloral.

Taking, however, full account of the clinical facts, I believe that in the case of chloral it is in the highest degree essential that it should be freed from all chemical impurity whatever; and that the chemical impurities special to chloral hydrate, other than its highest state of crystalline purity, are, more than in other cases, of a kind to interfere with and to contravene the legitimate and desired effects of the drug. For this reason I would altogether prohibit the use of chloral, either in solution or otherwise, which is not of the utmost purity. I may add that there is no practical means by which the purity of chloral in solutions can be ascertained; and the best authorities state that a very large proportion of the solutions current in medical and pharmaceutical practice are of an impure, untrustworthy character, and therefore liable to produce dangerous results. Pure chloral produces rest and relieves pain without giving rise to excitement, nausea, or gastric irritation; and its effects do not need to be enhanced, as in the case of opiates, by increasing doses, if its administration needs to be continued. Impure chloral, on the other hand, irritates the stomach, produces excitation, headache, sickness. To produce the best effects of chloral it should not be given on an empty stomach. It is not necessary that a full meal should have been taken, but it is desirable that some light nourishment or a biscuit or something of the sort should be eaten before the dose of chloral is administered.

I may add finally one word as to the clinical observation of the effects of chloral hydrate when it has been administered in excess, or when it has been used as a poison. Chloral hydrate poisons by paralysing the heart, and its effects are observable in retardation of the pulse and respiration. Hence I have been led to urge the use of strychnine in combating these effects. The results of my experiments (Transactions of the Academy of Medicine of Berlin) have been confirmed by subsequent observers, but I believe that this antidotal use of strychnia to combat excessive or fatal doses of chloral may still be usefully brought to the notice of practitioners in general; for it is not so far or, I observe, so generally known as it might be. I have often been struck with the report of bounding pulse, severe headache, and nervous excitement in reported cases of an overdose of chloral; these are not the characteristic effects of chloral, but of impure and poisonous substances sold as chloral, and especially the various impure and unreliable solutions of chloral, which physicians and dispensers too readily employ.

THE ACTION OF SALICINE.

BY A. D. L. NAPIER, M.B., ETC.

In a recent number of the *Practitioner* the therapeutics of salicine were pretty fully discussed; still more lately, the question of the similarity of these to the action of quinine was broached. As there yet seems some difference of opinion regarding these matters, I venture to trespass on your space, by recording, in a few words, my experience of the drug. Since July 1876 I have used salicylic acid and salicylate of soda very frequently; in fact, I have treated almost every case of rheumatism, of an acute or subacute nature, which has come under my care, more or less, by means of these drugs. The smallest dose prescribed was three grains of salicylic acid every three hours, the patient in this instance being a child of six years old; the largest dose prescribed to adults was twenty grains every two hours for sixteen hours.

The form of rheumatic disease for which I have most frequently ordered salicine, is the arthritic, and in these cases relief was almost invariably experienced. In one case of severe arthritis of the left finger, wrist, and ankle joints, decided benefit attended the exhibition of a fifteen-grain dose, and though the disease was of six days' standing, complete relief from pain was experienced after other three doses. In such cases I have repeatedly seen reduction of pain, redness, heat, and swelling about an hour and a half after the administration of a twenty-grain dose.

The salicylate of soda, in addition to its general action in lessening arterial tension, acts frequently as a powerful diaphoretic, producing increased perspiration, large flow of urine, and in some cases an increased quantity of saliva. These latter effects seem to be more often caused by the soda salt than by the acid. Although swelling frequently is materially decreased in a short time by salicine, yet in some cases this is not so: I have a patient at present, who suffered from rheumatic arthritis of the wrist joint, was treated by salicylate of soda, and relieved of all acute pain, more than a month ago, whose joint is still greatly swollen, and useless for all active exertion; he is now rapidly improving under galvanism.

Symptoms exactly similar to cinchonism may follow the prolonged use of salicine. An old gentleman who was under my care suffering from rheumatic affection of the wrist and ankle joints, was ordered twenty grains of salicylate of soda every two or three hours; a few doses speedily cured him. He ceased taking the drug, and was again similarly affected, about ten days after his first attack; the drug was resumed, and he was recommended to continue it for a fortnight, in ten-grain doses twice daily, after all symptoms had disappeared. He only used it however for two or three days. Within a short time he again became ill, and having experienced the decidedly beneficial action of his former medicine, resumed taking it without sending for medical advice. On this occasion, evidently desiring, to make assurance doubly sure, he persevered in taking twenty grains every three hours for more than a week, although the pain had almost ceased after two or three doses. He then became very deaf, had ringing noises in the ears, experienced severe headache, thirst, loss of appetite, and felt dull and heavy. The medicine was discontinued, and the unpleasant symptoms shortly vanished. It is necessary for the perfect action of salicine, that the drug should be used in reduced doses for some time after acute symptoms are dispelled; I have often seen a relapse from a too early cessation of the medicine.

In muscular rheumatism, salicine affords some relief, but its action in such cases has given uncertain results in my hands. In neuralgic affections, I have seen good from salicylic acid, more especially in mixed cases of neuralgia and rheumatism; one case of neuralgia of the brachial plexus was undoubtedly cured in a very short time. From its greater solubility, and from its being more easily taken by the majority of patients, I have found salicylate of soda preferable to the salicylic acid, With the exception of the greater diaphoretic action of the former, I have been unable to discriminate between their therapeutic action.

A FEW WORDS ON THE CAUSES OF GRAVEL.

(*Studied at Contrexeville, a Mineral Station in the Vosges.*)

BY DR. DEBOUT D'ESTRÉES,

Medical Inspector of the Station.

Among the objects which present themselves to the observation of a medical man practising in a hydro-mineral station, the study of the etiology of the diseases that have brought the strangers to the station is one of the most important and useful.

I have thought that it would be interesting for others to know what nine years' practice as a doctor taught me in this respect, in the country the name of which is known in France by all patients who suffer from gravel as well as by the whole of the French medical body.

Although the number of patients complaining of gout, or of affections of the bladder, is very large at Contrexeville, and although that of the unfortunate patients, who are subject to attacks of hepatic colic, presents a total which would allow a study similar to the one I beg to present; it is gravel that we meet with there most frequently, and I only wish to call attention for a few moments to the study of the causes of the latter.

Among 1,028 patients affected with uric-acid gravel, 822 of whom were men, 197 women, and 9 children, I was able to ascertain the principal cause of the disease in 528 cases: with the other patients the causes were either numerous, not sought for, or not to be known.

The principal causes were as follows :—

Hereditary in	191	cases.
Disorderly digestion in	160	„
Excess of food in	101	„
Sedentary life, want of exercise in	95	„
Violent moral emotions in	35	„

and lastly, one single example of uric-gravel caused by injury to the loins in a child twelve years old.

Transmission from generation to generation, and the three causes following it, are too well known to render it necessary to insist upon them; nevertheless I think I must point out one case of gravel with nephritic colic in a child less than twelve months old. The mother, a young woman twenty-six years old, who had been suffering from uric-gravel for four years, had during her pregnancy three fits of nephritic colic, nevertheless the child was born in due time and in good condition; but a fortnight after its birth it had real nephritic fits, vomiting, writhing, and complaining chiefly when the loins were touched. The fits ended by the emission of rather red thick sand. They returned every six weeks.

We must also say what we have learned from experience with regard to the effect of some vegetables, viz., asparagus, sorrel, tomatoes, green beans, in the production of uric acid in all those who are affected with gravel. The absorption of asparagus in a rather considerable number of cases, which we may estimate at the rate of 20 per cent., is followed by more or less violent pains in the loins, and sometimes shortly afterwards by nephritic colic. We never noticed that it was followed by a more considerable expulsion of uric acid. I am of opinion that asparagus does not produce uric acid, but that as it determines temporary congestion in one kidney which already contains some red sand, it facilitates the agglomeration of it, and may produce the formation of gravel.

With regard to sorrel, green beans, and tomatoes, they act differently. They less frequently produce pains in the loins, but their absorption is followed by the emission of uric acid; nevertheless a small number of patients complain of pain in their loins after having eaten those vegetables; and with some this is so evident, that, in spite of their taste for these different vegetables, they have spontaneously ceased eating them.

With regard to the oxalic gravel, we only met with forty-seven cases, forty of which were among men, and seven among women. We must say that in more than one-third of the microscopic observations made with patients affected with uric-acid gravel, we met with octahedric crystals of oxalate of lime.

The causes which produce this sort of gravel are very much the same as those producing uric-acid gravel, by merely adding to it the exaggerated absorption of victuals containing oxalate of lime, and sorrel and tomatoes in particular.

We have not met with any *xanthic* concretion, and in two cases in which we observed *cystic* gravel we could not connect the existence of this production with a particular cause. One of the patients had uric-acid sand in his urine as well as cystic gravel well characterised. His father drank at that very time mineral water for uric acid gravel.

Phosphatic Gravel.—There is a primary phosphatic gravel and a secondary, or a catarrhal phosphatic gravel. The former is more especially constituted of phosphate of lime, with carbonate of lime urates, and alkaline phosphates.

The latter more especially consists of ammoniaco-magnesian phosphate.

The primitive phosphatic gravel was first met with by the author in anæmic persons, sailors coming back from Cochin China or Senegal, and tuberculous individuals; besides it may be produced under the following circumstances:—

1st. Where persons being anæmic, in consequence of a real mal-assimilation, their organic materials allow the mineral matter of their economy to deposit.

2nd. It may be met with in individuals affected by a lesion of the nervous system presiding over the eliminating functions of the kidney.

3rd. Exceptionally it is met with amongst patients suffering from the uric diathesis, where red sand and acid urine alternate suddenly with a deposit of phosphate of lime, and carbonate of lime, in neutral alkaline urine.

There may be phosphate of lime-gravel in acid urine, but then the urine is generally less acid than normal urine.

Secondary phosphatic gravel is produced by the two following causes :—

1st. When there is fermentation of the urine before its evacuation.

2nd. When the abuse of energetic alkalines or an exclusively vegetable diet has made the urine alkaline.

The ammoniacal fermentation of urine is caused by the development of the ferment described by Mr. Pasteur, and introduced into the economy either by the circulatory or respiratory tracts, or sometimes by an instrument introduced into the bladder.

A considerable quantity of pus may exist in urine for several years without there being any production of phosphates.

In the secondary phosphatic gravel the urine is always strongly alkaline.

The etiology of carbonate of lime-gravel is still obscure, nevertheless as that body is generally found united with phosphate of lime in primary phosphatic gravel, it may be admitted that the causes of these two affections are the same, and that the carbonate of lime is also produced by mal-assimilation.

Such, upon the whole, is what I know of the causes of the production of gravel from my personal practice at Contrexeville. I must, however, add some few more words on the differences in the attacks of nephritic colic according to the different sorts of gravel ; but on this point I draw my evidence from the communications of my patients and from the letters of my confrères ; for if persons complaining of gravel are numerous at Contrexeville, nephritic colic is very scarce there, where gravel is generally expelled without any pain. With uric-acid gravel the pain caused by the kidney gravel is not well localised by the patient. It often settles in the side, sometimes in the lower part of the abdomen, which explains the errors of diagnosis easily committed under similar circumstances ; hematuria being the exception rather than the rule.

In the oxalate of lime gravel the symptoms are the same ; except that there is always hematuria.

In phosphatic kidney gravel there is no hematuria, the pains are less excruciating and the fits less acute, but they are of much longer duration : the former last hours, but the latter are counted by days. Lastly, they are almost constantly localised in the kidney.

In conclusion, I shall add a few words on the composition of Contrexeville water and its therapeutical indications:—

This water is alkaline, contains lithia, and is chalybeate. Though containing much sulphate of lime, it is, as the French authors have written, "such a friend to the stomach" that all tolerate it equally well. I cannot give a better proof of this, than the instance of the young child I mentioned (when I spoke of gravel being transmitted to successive generations), who could drink some of it mixed with milk. Thus the sand that made it suffer so much was rendered painless by the use of Contrexeville water taken at the spring.

It expels the kidney gravel, and it does it so easily that there is only one case of nephritic colic to be found among one hundred patients suffering from gravel at Contrexeville, and yet every morning there is much gravel expelled while they are drinking at the spring.

In the case of concretions, the size of which is too large to allow them to pass through the natural ducts, it intensifies all symptoms and thus reveals every year the existence of stones that had hitherto remained undiscovered, or confirms their existence in patients who would not allow the sound to be used.

But its principal quality, that to which it owes its well-deserved reputation on the Continent, is, that though alkaline, Contrexeville water is both tonic and restorative, a quality which renders it most valuable to those who suffer from gout, or from gravel, in large towns; to old men suffering from catarrh in the bladder, and who after having vainly gone through the whole series of balsamic medicines have recourse to the efficacy of Contrexeville water; to women suffering from hepatic colic who can take these waters without fear of anæmia, which is unfortunately so often caused by mineral alkaline sodic waters like those of Vichy and Carlsbad.

NERVE-STRETCHING IN SCIATICA.

BY JOHN CHIENE, F.R.S.E.,

Assistant-Surgeon, Edinburgh Royal Infirmary.

ENCOURAGED by the success which followed the performance of this operation by Mr. Lister in a case of severe sciatica, I made trial of it in two cases which were lately admitted to the surgical clinical wards in the Edinburgh Royal Infirmary. A short narration of these cases may be of interest. Before doing so it may be well shortly to describe the operation as recommended by Professor Nussbaum, of Munich, who first introduced this method of dealing with large nervous trunks the seat of severe pain. The brachial plexus, the sciatic and anterior crural nerves, have been stretched. The nerve is exposed by incision and hooked up, in the case of the sciatic, on the finger of the operator. It is forcibly pulled, first proximally, and then distally; the limb of the patient is then lifted from the table by the sciatic nerve.

1. Bernard Lamb, aged forty, furnace-man. He states that he began to complain of pain in the right leg five years ago. The pain ran down the back of the thigh to the knee; latterly pain was felt in the calf of the leg and ankle. The pain was severe and constant, and was most acute when he walked or worked. About two years ago the muscles of the limb became defective in power; in October last he had to give up work altogether. Various remedies were tried without any good effect. On admission to the medical wards on the 10th of March, 1877, he required to use a stick to support himself, and dragged his leg after him. When in bed he could not raise the affected leg from the bed, and when shifting his position he required to use the

sound leg to move the affected limb. In the medical wards galvanism was made trial of, with quinine and bicarbonate of soda internally. These remedies were followed by little or no improvement.

On the 12th of April he was admitted to the surgical wards. The affected thigh measured at its middle one inch less in circumference than the sound leg at a corresponding point. There was no difference in the calves of the legs. On the 19th of April the operation was performed. Chloroform was administered, an incision three inches long was made over the course of the sciatic nerve as it emerged from under the fibres of the gluteus maximus. The nerve was exposed and lifted up upon the finger. It appeared normal. The nerve was then forcibly tugged from above downwards, and from below upwards, and the limb was then lifted from the table by the nerve. The wound was treated antiseptically, and a catgut drain introduced to ensure free drainage. On the following day the patient said he had not been so well for years. The pain was completely gone, and he could now lift his leg from off the bed without any difficulty. He was out of bed in a fortnight, and walked about the hospital without discomfort. He expressed himself as daily getting stronger. On Wednesday, May 9th, he went out for a walk in the town and returned, saying that he was better than he had been for years. On the following day he ran down stairs to show how nimble he was. He was dismissed on the 11th of May, 1877, feeling perfectly well.

2. Thomas Buchanan, aged forty-one, furnace-man, was admitted to the clinical surgical wards on the 20th of April, 1877. He states that he began to complain of severe pain down the back of the left thigh in June 1876; since that time the pain has gradually increased in severity. He managed to work half-time until February, when he had to give up work altogether. The following treatment had been tried without any effect:—Fly-blisters, injections of morphia, turpentine internally, acupuncture, dry cupping, wet cupping, and Corrigan's cautery.

The pain is now very severe and paroxysmal; he complains also of numbness in the affected limb. He is afraid to move or turn in bed, as the slightest movement brings back the pain. Careful measurement showed no difference in the size of the limbs.

The nerve was stretched on the 23rd of April. The only difference from the operation in Lamb's case was that the nerve was exposed lower down the thigh, in order to simplify the application of the antiseptic dressing. When the nerve was exposed it appeared fatty, and large tortuous veins ramified over it. In attempting to lift the limb from the table—the man had a very muscular thigh—the nerve stretched to such an extent that I felt sure that I had torn it in whole or in part. On the following day however sensation and motion were unaffected, and the man said he had not been so comfortable for months; he could now move his leg in any direction without the slightest pain. His progress was uninterrupted. He was out of bed, and the wound healed on the 10th of May. He can walk without any pain, and says that he feels in every way well, with the exception of a small, slightly painful point on firm pressure behind the trochanter. He considers this slight pain as of no consequence. A needle was introduced at the painful point, and the patient dismissed on the 11th of May, 1877.

Remarks.—When we remember that a portion of the affected nerve has repeatedly been excised in severe cases of neuralgia with only temporary relief, we may well doubt the permanency of the cure in the cases just related. Both men state that even if the relief afforded only lasted for a fortnight, they would willingly again submit to the operation, from which they had suffered no inconvenience. This may to a certain extent be due to the marked painlessness of antiseptic wounds, but at the same time there is little doubt that the after-inconvenience is less than if the actual cautery had been applied. The scar which remains is certainly less disfiguring, a matter of little importance on the back of the thigh but of considerable import in neuralgia of the branches of the fifth pair, in which I think stretching of the affected nerve should certainly be made trial of.

Both men were well developed, tall and muscular, both furnace-men, exposed to great alternations of temperature. They both state that sciatica is common amongst their fellow-workers, and that the left leg is almost always affected. The explanation they give of this fact is that this leg is stretched during the act of heaving coals with a shovel into the furnace.

This point is of some interest, and worthy of further elucidation by those who have opportunity. If true, it evidently points to stretching of the sciatic nerve, probably as it passes out of the sciatic notch, as one cause of sciatica.

It will be noticed that Bernard Lamb's right leg was the seat of pain. *He is left-handed,* and works in the opposite way from his fellow-workmen.

It is in my opinion difficult to explain the *rationale* of this treatment. We require more exact data regarding the minute pathological anatomy of the sciatic nerve in sciatica. Rokitansky speaks of neuritis as one cause of sciatica. The result of chronic inflammation will be the formation of adhesions and inflammatory thickenings of the neurilemma pressing on and irritating the nerve fibrils. In all probability the result of the severe stretching will be a breaking down of these adhesions, removal of pressure from the nerve, and its restoration to its normal functions. When we notice that the relief is immediate, and that there is no interference either with the sensory or the motor elements of the nerve, we must I think come to the conclusion that there is no rupture of the nerve tissue proper, or conducting part of the nerve, but that the stretching acts on the neurilemma, or insulating portion of the nerve. Another explanation may be that the operation acts as a severe counter-irritant. The powerful counter-irritants used without effect in Buchanan's case militate against this idea. The question is still *sub judice,* and more precise pathological data are required before we can come to a conclusion. A longer time will require to elapse before it can be said that the benefit of the operation is permanent.

These cases were the subject of lecture to the class of clinical surgery in the University of Edinburgh on the 10th of May, 1877, and are laid before the profession as a plan of treatment which may be worthy of further trial. There is no doubt that many sufferers from sciatica would be glad to try anything rather than suffer longer from this most painful and intractable disease.

A CASE OF DROPSY.

BY J. MILNER FOTHERGILL, M.D.

Assistant Physician to the West London Hospital.

THE following case of dropsy presents some features of interest to the profession, and so is worth recording.

J. H., aged sixty-nine, a brewery man, presented himself as an out-patient at the West London Hospital in the middle of January last. At that time there was a systolic murmur to be heard at the aortic orifice. He was admitted into the hospital on the 25th of that month. He was a tall man with white hair and a florid complexion, of grand physique, and of distinctly gouty diathesis. His general health had been excellent, except that he has had occasional attacks of rheumatism. He had lost all his teeth, which had fallen out without a speck of disease on them. The radial arteries felt atheromatous, and the left temporal artery for an inch was quite calcareous. There was extensive œdema of the lower limbs, reaching to the groins, but not involving the scrotum. The knee-joints were greatly distended by fluid. The upper limbs were even more swollen than the lower ones. On making firm pressure over the brachial arteries, so as to press through the effusion, a distinct thrill could be felt, most marked in the right arm. The area of normal cardiac dulness was resonant from emphysema. The heart's apex could be felt in the 7th interspace. The first sound could be heard there of normal intensity. A systolic bruit was heard at the base, and the aortic second sound was muffled. (The aortic valves were commencing to undergo valvulitis). Pulse 100, with slight irregularity. This pointed to mitral disease, but no mitral bruit could be made out on examination. The urine was scanty and loaded with lithates.

It did not contain any albumen. The total quantity passed in the twenty-four hours was but half a pint. From the physique, the implication of the upper extremities, and the *tout ensemble* of the case, it was thought there was old standing kidney mischief as well as organic mischief in the heart. The prognosis, as to relief, was held to be favourable. The treatment consisted of a milk diet, a purgative and a vapour bath on alternate days, with the following mixture:—Pot. Iod. gr. v., Pot. Bicarb. gr. x., Inf. Digitalis ʒj., Inf. Buchu ℥ j., ter in die.

26*th.*—Slept a little. Had a powder (Elaterium gr. $\frac{1}{12}$, Pulv. Jalap Co. ℈ij.) at 5 A.M. Had four motions by 10.30 A.M. Tongue dirty at the base and middle, red at the edges and the tip. Had a vapour bath, but did not sweat, on the 27th.

28*th.*—Another powder. Decidedly better. Tongue clean. Swelling of arms and legs decidedly reduced. Urine acid, sp. gr. 1·020, clear; still only half a pint.

On the 29th, when seen again, he was much relieved, the dropsy was falling steadily generally, but there was a slight increase in the right arm. The thrill in the brachial arteries was not nearly so distinct. No systolic bruit could now be heard at the base, but the second sound still remained muffled. A systolic mitral bruit could now be distinctly made out in the 7th costal interspace, one inch and a half to the left of the left nipple. Pulse 104, with slight irregularity. Treatment to be continued.

30*th.*—Improving. Urine ℥ xij.

February 1*st.*—Sleeping well. Appetite good. The mitral murmur quite distinct. In consequence of the now undoubted presence of mitral disease the dose of digitalis was increased. The following mixture was prescribed:—Pot. Bicarb. gr. xv., Fer. Am. Cit. gr. v., Tinct. Digital. ♏x., Inf. Buchu ℥ j. ter in die. The powder to be taken but twice a week, and the bath but twice a week. Some fish in addition to the milk diet was now permitted. The condition was now much improved; the dropsy had nearly gone, and the effusion into the knee-joints had quite disappeared.

5*th.*—Irregularity in pulse gone. Pulse good; tongue clean. Passed three pints of water, clear, and free from albumen.

8*th.*—Slept well; felt well. Passed three quarts of water.

Thrill in brachial arteries has disappeared. Powder and bath to be discontinued. The mixture as before. A little meat and a pint of beer to his dinner permitted at his request. To get up a little.

From this time the patient continued steadily to improve. The dropsy entirely disappeared. The pulse was regular, but still 100. The thrill in the brachial arteries could still be felt occasionally. The patient was up every day.

February 16*th*.—The house-surgeon (Mr. Oct. W. White) has written on the card "Discharged Cured," a slightly too sanguine view of the case.

Remarks.—This cure is interesting from its *tout ensemble* being that of combined heart and kidney dropsy—a view in no way negatived by the absence of albuminuria. The state of the aortic valves bears out this view. The mitral complication, however, gave it some peculiar features. The rapidity of the pulse, and the compressibility of the radial arteries, though atheromatous, pointed to a mitral lesion, even though no mitral murmur could at first be detected. After a day or two in bed with general improvement of the powers, it showed itself. The small bulk of urine, laden with lithates, and the irregularity of the pulse in time and volume, corroborated this view.

The increase in the bulk of urine under the treatment pursued is instructive. Until the presence of mitral disease was evidenced by a murmur, the dose of digitalis given was small. After that it was increased, with the following effect as regards the bulk of urine:—From the 25th to the 29th of January it was but half a pint per diem. On the 30th it was ℥xij. The dose was increased on February 1st, and on this day, the 2nd, and 3rd, one pint was passed. On the 4th, ℥xxx. On the 5th, three pints. On the 6th it had risen to three quarts, at which it remained. This shows that it took some little time for the digitalis to affect the blood-pressure in the arteries, and so influence the blood-pressure on the glomeruli of the kidney: but that when once induced the influence was persistent.

On February 22nd he showed himself as an out-patient. He felt well, and his respiration was not hurried. There was no return of the dropsy. The bulk of the urine was still three quarts. The mitral murmur was now scarcely audible. He was ordered the following mixture:—Potass. Bicarb. gr. x., Fer. Am. Cit. gr. v., Tinct. Nuc. Vom. ♏ x., Tinct. Digital. ♏ x., Inf. Buchu ℥ j., ter in die.

On March the 1st no murmur could be heard: on the 8th it was doubtful: on the 15th, inaudible: on April the 19th it could be detected: on April the 26th and May the 5th it was inaudible: and on May the 10th it was doubtful if there could be said to be a murmur. This absence of the murmur, which was distinct enough in the early part of February, leads to the conclusion that the mitral valves are once more nearly if not quite competent. Cases of curable mitral murmur have been recorded by Dr. Andrew, Dr. George Balfour, and the writer; but these cases were in younger individuals than this patient. Where the mitral valves are found to be once more competent, the ventricle has recovered its normal size, and with it the size of the ostium. The valves are affected, but not extensively so; while the ventricle, and with it the mitral orifice, is enlarged and dilated, the valves are incompetent to close the ostium; but when the ventricle and orifice recover their normal size, the valves are once more competent. The experiments of Wilkinson King have proved that the mitral valve is rather more than competent, that it possesses some spare power in fact, and still closes the orifice when the left ventricle is much distended. That there was such reduction in bulk of left ventricle in this case could not be ascertained from the emphysematous condition of the lungs over the heart. It was only possible to surmise this from the absence of murmur, and the improved general condition of the old man.

On May 10th he looked well, indeed presented the appearance of an unusually hale man, had walked from Chiswick without discomfort, and only found his breath short on exertion. He does not suffer from attacks of dyspnœa. His pulse was regular in time and volume, but 120, hastened by his walk probably. His respirations were 20. He was making about as much water as when he left the hospital—three quarts per diem. There was some bounding in his brachial arteries, rather more in the right than in the left. His general health is excellent.

OBSERVATIONS ON SALICINE, SALICYLATE OF SODA, AND SALICYLIC ACID.

BY JOHN A. ERSKINE STUART, L.R.C.S. EDIN., MUSSELBURGH, N.B.

THE subject of internal disinfection has of late attracted a good deal of attention from various members of the profession. My attention has of late been directed to the subject of salicylic acid and its congeners. The following observations may be of interest to the readers of the *Practitioner*:—

Salicyluric Acid.—One day I took a dose of nine grains of salicylic acid in powder. Three hours afterwards the urine which I passed was of a green tinge, and small crystalline bodies in great numbers could be seen in it on holding the bottle which contained it against a bright light. On leaving the bottle for a few hours, standing at rest, a copious precipitate of a white feathery consistence was seen occupying the bottom of the bottle to the extent of about half an inch. This precipitate is salicyluric acid. On microscopic examination it is found to consist of crystals of one form, but presenting a different appearance as seen from various points of view. They are six-sided bodies, oblong in shape, of a fine silvery-white colour, and showing none of the reactions which uric acid gives with the various chemical tests. If the crystals are filtered off the urine at once becomes putrid, but if left alone will remain fresh for above a week.

Salicine.—This substance is excreted in the urine in the form of the salicyl hydride, which sinks to the bottom of the urine as a fine crystalline cloud. It is easily detected by the perchloride of iron test.

Salicylate of Soda.—This substance in solution is a very weak antiseptic, so much so that the solution gets musty and changes colour in about three days, if exposed to the air. However, when taken internally, it is excreted in a very active form, for urine passed three hours after taking a fifteen-grain dose of the salicylate, kept fresh and free from ammoniacal odour, and perfectly clean when exposed to the air for ten days.

A New Test for Salicyclic Acid.—When salicylic acid is triturated with strong sulphuric acid, a crystalline film of a pinkish colour is formed.

ARSENIC IN ALBUMINURIA.[1]

BY T. LAUDER BRUNTON, M.D.

ALBUMINURIA has been divided by Gubler into two sorts, false and true. False albuminuria, according to him, consists in the admixture of pus, or of blood, with the urine. I, however, am inclined to extend the significance of the term false albuminuria, and include in it all those cases where an albuminous body other than serum-albumin occurs in the urine. False albuminuria would thus include not only those cases where pus or blood occurs in the urine, but those in which the so-called Bence Jones's albumin, egg-albumin,[2] and possibly paraglobulin make their appearance. Under ordinary circumstances albuminous bodies do not diffuse through animal membranes, but it has been shown by Bernard, Pavy, Stockvis, and others that albumin of eggs will pass out through the kidneys, while the albumin of blood does not do so under similar conditions. Bernard, it is true, believed that serum-albumin passed through the kidneys in much the same way as egg-albumin when it was injected into the circulation; but Stockvis, having repeated Bernard's experiments, showed that the serum-albumin only appeared in the urine when the experiments had been imperfectly performed, and the injection had interfered with the proper circulation of the blood in the veins, thus causing venous congestion of the kidney itself. Egg-albumin and Bence Jones's albumin he found to be excreted with the kidneys, not only when they were injected into the blood, but when they were introduced under the skin, or in large quantities into the rectum.[1] In the two latter cases the interference with the circulation was obviously not the cause of the appearance of albuminuria. It seems curious that one sort of albumen should pass through the vessels of the kidney, while another should be retained, and the only feasible explanation of it seems to be that the molecule of the different albumens varies in size. For the passage of substances in solution through membranes has been shown by Moritz Traube to resemble very much the passage of powdered matters through a sieve.[2] When the particles of the substance are too large to pass through the meshes of the sieve they are retained, but when they are too small they pass through. Thus almost all crystalline substances readily diffuse through animal membranes, and Graham divided bodies, according to their diffusibility, into crystalloids and colloids. But there is one marked exception to the rule that crystalline bodies diffuse, and this is the colouring matter of the blood, hæmoglobin. This substance differs from most other crystalline bodies in possessing a very high molecular weight, and the molecule is therefore, in all probability, very large. Traube's hypothesis at once explains this curious exception to Graham's law, and renders it probable that hæmoglobin does not diffuse simply because its molecule is too large to pass through the pores of ordinary membranes. We may apply this hypothesis to explain the appearance of albumin in urine after the injection of white of egg under the skin, and its absence after a similar injection of serum-albumin. If we suppose that the molecule of egg-albumin is smaller than that of serum-albumin, we can readily understand that after being absorbed from the subcutaneous cellular tissue, and carried by the blood to the kidneys, it may pass through the vessels into the urine, while the larger molecule of serum-albumin will be retained. The facts regarding false albuminuria are, that egg-albumin, and other albumins such as Bence Jones's albumin, pass out through the vessels of the kidney without any alteration in the structure of the organ, or interference with the circulation of the blood through it, while serum-albumin will not pass out.

---

[1] Read before the Medical Society of London.

[2] To distinguish between the entire white of egg or *albumen* and *egg-albumin*, which is its chief but not its only constituent, the former is spelt with an *e* and the latter with an *i*.

---

[1] Stockvis. "Over resorptie en Assimilatie van het als voedsel genuttigd eiwit 1872," and "Maandblad voor Natuurwetenschappen," 2de Jaargang, No. 6, blz. 95.

[2] *Centralblatt d. med. Wiss.* 1866, p. 97.

True albuminuria consists in the passage of serum-albumin, which is a normal constituent of the blood, into the urine. It depends either upon alterations in the structure of the kidney, or interference with the circulation through it, or upon both. It has been supposed that great increase in the pressure of blood within the renal glomeruli will cause albumen to appear in the urine, but the experiments of Stockvis appear to disprove this supposition.[1] He found that no increase in the arterial pressure, either generally throughout the body, or in the kidney alone, would produce it. He raised the general pressure by compressing the aorta and other large arteries, and he raised the pressure in the kidney itself by dividing the vasomotor nerves of the organ so that the renal arteries dilated and allowed much more blood than usual to pour into the kidney. In neither case did he find any albuminuria, but the result was very different when he interfered at all with the venous circulation of the kidney. An obstruction to the return of thebloo d through the renal veins was sufficient to cause albuminuria. Thus it came on when the renal veins were tied, when the vena cava was plugged, or when the movements of the heart were interfered with by a small caoutchouc ball passed down the jugular vein into the right ventricle, or when quantities of fluid were injected quickly into the jugular vein. It is to the venous obstruction caused by such injections that Stockvis attributes the albuminuria observed by Bernard after the injection of ordinary serum into the vein.

Pathologically we find albuminuria occurring from venous congestion, in cases of thrombosis of the vena cava, in mitral disease, and in emphysema whenever the right ventricle begins to yield and allow regurgitation into the veins. There is, however, another cause of venous congestion which at first sight would appear likely to have an effect exactly opposite to that which it actually produces. This is obstruction to the flow of blood through the renal artery. When this artery is ligatured, or when the circulation through the kidney is stopped by the action of drugs upon it, we find albumin appearing in the urine after the secretion has been re-established. One would expect to find the kidney pale, and anæmic after ligature of the artery, but, on performing this experiment, Brown-Séquard found that the kidney was deeply congested, the reason of this being that the veins had lost their contractile power, and the blood had consequently flowed backwards into them from the larger venous trunks. We may, indeed, form a good conception of the condition by noticing the difference between the paleness of the hands when they are first exposed to cold and the congested blueness which follows a longer exposure. Venous congestion then is the cause of albuminuria depending on alterations in the circulation. In embolism of the kidney the result as respects a part of the organ will be the same as what we find in the whole organ after ligature of the renal artery, and the albuminuria depending upon embolism may be explained in the same way.

---

[1] Stockvis "Sur l'Albuminurie" and "Quelques Mots à propos de la Brochure de M. le Professeur Correnti relative à l'Albuminurie." *Journ. publié p. l. Soc. Roy. d. Sciences med. et nat. de Bruxelles*, Reprint.

The second cause of true albuminuria is alteration in the structure of the kidney, and these alterations may affect the vessels and tubules or the connective tissue stroma in the which they are imbedded. In the waxy kidney the vessels are affected and the structure of their walls is changed. It seems not improbable that the altered structure of the vessels may permit the serum-albumin to transude through them in somewhat the same way as the vessels in their normal condition permit the transudation of egg-albumin. In desquamative nephritis we may suppose that the albumin finds its way into the uriniferous tubules, because the epithelial lining which might have prevented its passage has been more or less removed. Even in cases where the albuminuria depends upon organic disease of the kidney, the quantity of albumin present in the urine varies with the condition of the circulation. As a rule it is less during the night and greater during the day. We find too, generally, that a relation subsists between the quantity of urine and the proportion of albumin present in it. When the urine is copious the proportion of albumin is less; when the urine is scanty albumin is usually increased. Now it has been shown by Ludwig and Max Hermann that the quantity of urine increases with the pressure of blood in the renal glomeruli, so that, other things being equal, contraction of the arterioles just at their exit from the Malpighian capsules will increase the pressure in the glomeruli, and augment the secretion of urine. At the same time their partial contraction will probably diminish the pressure in the capillaries, will probably lessen the quantity of the lymph exuding from them into the connective tissue, and will thus lessen the leakage of albumen into the uriniferous tubules. Probably this is the reason why the albumen is usually diminished when the urine is increased, but at any rate the fact is that increased secretion does indicate increased pressure in the glomeruli, and increased secretion is usually, though not always, associated with diminution in the albumen.

I will now relate the case which I wish to bring before you, and will afterwards return to the bearing of what I have already said upon its pathology.

R. A., aged 33, analytical chemist. Short, slight, fair-haired, sallow complexion, thin. With the exception of being liable to headaches after exertion, he was apparently healthy until ten years ago. He then noticed a tendency to become very easily tired after any exertion. About a year after this (1868) he wished to insure his life, but was rejected on account of the medical officer of the insurance company having discovered albumen in his urine. He then consulted two medical men, who gave him strychnine in doses of about $\frac{1}{30}$th of a grain. This immediately stopped the albumen, but brought on violent headaches and sickness. The albumen at this early stage was only present during the summer months. It came on with work and disappeared with rest. In the winter it was absent, except during one or two severe frosts.

In the following summer it returned in large quantities, and he was advised by his medical man to go to the seaside (Margate and Ramsgate) for the three hot months, to take hot sea-baths, and to abstain from all exertion.

Though the albumen ceased, the patient's strength diminished very much. On his return to London the weather was cooler and he rapidly improved, so as to be able to return to work. In 1870 the albumen returned more persistently, so he was again recommended by a medical man to take a sea-voyage. He went to the Cape of Good Hope; leaving in June and arriving in November, very little, if at all, the better for the trip. This might be due to his ignorance of the care required in selecting the proper food. He stayed six weeks at the Cape, then came back. On his return he tried pancreatic emulsion, and for two or three days it was very successful and stopped the albumen, but after that time it brought it on worse than ever. He then tried the skim-milk treatment for three months. It was very successful at first, but he lost weight rapidly, and the albumen gradually reappeared during the last two weeks of the treatment. On discontinuing it the albumen returned.

In 1872 he was again recommended to take another and longer voyage, and take care of his diet on the way and after his arrival. He had now found that fatty food always brought on albumen, and that meat taken in the morning had a similar effect, but he could take meat with impunity for supper. He now went to Australia and New Zealand for nearly three years, leaving in October 1872, and returning in June 1875. During the greater part of this time phosphates were very abundant, and although albumen was generally completely absent, it came on whenever he exerted himself much. His strength also did not increase much. On one occasion he took a prescription containing quinine and phosphoric acid, which almost immediately caused albumen to appear in considerable quantities, and was some time before it again disappeared. After his return in June 1875, he still remained in *statu quo.*

I saw him for the first time in January 1876. No œdema; the heart and lungs were healthy; liver normal; appetite poor; subject to acidity and headache. On inquiry I found that the albuminuria was brought on by exertion either mental or bodily in the morning, by fats such as butter, or by meat for breakfast. After midday he could do work, and could take fat and meat without bringing on the albumen. The quantity of albumen was always greatest when the urine was scanty, and least when the urine was abundant. When he engaged in his work during the forenoon albumen did not come on immediately after breakfast, but began to appear about eleven and remained until about two. When he did not work the albumen did not come on at all. He suffered much from acidity, especially in the morning.

The remarkable fact that meat and fats caused albumen to appear, and that by rigid adherence to a farinaceous diet he could completely get rid of the albumen, led me to think that his albuminuria might be connected with imperfect digestion, and I accordingly gave him nitro-muriatic acid before meals. This lessened the acidity, and diminished, but did not completely remove, the albumen, so that I supposed the kidneys to be also in fault.

The quantity of albumen, as I have already mentioned, was always greatest when the urine was scanty, and least when the urine was abundant. This seemed to indicate to me that the albumen came either from the venous radicals in the kidney, or else from the lymphatic spaces in the connective tissue. I therefore attempted to act upon the arterioles of the glomeruli, and increase the secretion of urine by means of digitalis. The experiments made by Mr. Power and myself had shown us that this drug has a special action upon the vessels of the kidney, and, by giving it in small doses, I expected to contract the arterioles of the glomeruli, and thus while increasing the urine to diminish the pressure in the capillaries and veins, and lessen or remove the albumen. I intended, in fact, to produce by the drug the condition in which the patient had already found there was less albumen.

Two drachms of the infusion three times a day diminished the albumen, but lowered the action of the heart and interfered with indigestion. After reducing the dose and finding that still the digitalis disagreed, I stopped it after it had been taken for a fortnight.

There was no history of syphilis, but thinking that the alterative action of mercury might be beneficial, I tried small doses of Hydrarg. c. Creta, but without any beneficial result. I next tried quinine and sulphuric acid, but this brought the albumen in large quantities into the urine, doubled it in fact, within twenty-four hours, just as it had done before.

As he had found benefit from pancreatic emulsion for a day or two on a former occasion, I advised him to try it again, and to stop it after two days so as to prevent the increase of albumen which its continued use had previously induced. The first dose, however, made him worse, and it was accordingly stopped. My attempts to act upon the vessels of the kidney having been futile, and my random treatment with mercury and quinine having also been useless, I determined to try to act upon the secreting structures of the kidney, and accordingly gave arsenic, which has a considerable action upon tissue change, and also appears to possess also a special affinity for epithelial structures.

The patient accordingly took 3 ♏ of Fowler's solution at meal-times. Almost at once the albumen disappeared, and the patient was able to do much more work than usual without bringing it back. After giving this for a while I thought that as phosphorus is nearly allied to arsenic the hypophosphites might have a similar action, and accordingly gave him 5 grs. of hypophosphite of soda three times a day. This disagreed with his stomach and increased the albumen. He then returned to Fowler's solution again, and the albumen disappeared. On stopping the medicine the albumen came back, but the liquor sodæ arseniatis stopped it.

On again thinking over the pathology of the case it seemed to me probable that the albumen was derived in great measure, from the intestinal canal, and was due to imperfect digestion of albuminous substances which were absorbed from the intestine, and excreted in the urine in much the same way as white of egg would have been if the person had swallowed several raw eggs at once. As the pancreatic juice first converts coagulated albumen into a soluble form before finally digesting it, it seemed probable that imperfect pancreatic digestion was the cause of the albuminuria. The failure of the pancreatic emulsion to do good might have been due to the fat causing acidity of the stomach. The chyme being too acid would prevent the pancreatic juice from acting, and would thus make matters worse. I therefore gave pancreatine without the fat, so as to increase the pancreatic digestion without increasing the acidity of the stomach, and this has stopped the albumen also. He has, however, only been taking this for a short time, so that I do not know what the result will ultimately be.

I am inclined to regard the case I have described as due at least in part to imperfect digestion. I am uncertain whether the kidneys have anything to do with it or not. There is no history of nephritis, and the close connection between the digestion which is weak in the forenoon and stronger in the afternoon, the acidity of stomach, and albumen in the forenoon, and the want of these in the evening, seem to point to indigestion as the chief cause of the albuminuria. I have not seen any casts, but I have not examined the urine frequently for them. The albuminous body which appears in the urine is probably not serum-albumin, because it only coagulates between 175° and 180° F. while the albumin in a case of chronic Bright's disease which I tested for the purpose of comparison coagulated at 140° F. The point of coagulation varies somewhat according to the amount of urea and uric acid present in the urine, but this variation will hardly account for the difference of more than 30° F. between the coagulating points of the albumen in these two urines.

The points which I wish especially to bring forward are:— 1. The intermittence of the albumen and its connection with the digestion; 2. The absorption of albuminous matters from the intestine as a cause of albuminuria—a cause recognised indeed in several text-books, but often ignored in practice; 3. The utility of arsenic as shown in this case; 4. The possible use of pancreatine; 5. The effect of quinine in increasing the albumen.

Reviews.

1. *Kirke's Handbook of Physiology.* Edited by W. Morrant Baker, F.R.C.S., Lecturer on Physiology, &c. to St. Bartholomew's Hospital. 9th edition. London: John Murray, Albemarle Street, 1876. Pp. 859.
2. *Nouveaux Eléments de Physiologie Humaine, comprenant les Principes de la Physiologie Comparée et de la Physiologie Générale.* Par H. Beauvis, Professeur de Physiologie à la Faculté de Médecine de Nancy. Pp. 1140.
3. *A Course of Lectures on Physiology*: as delivered by Professor Kuss, at the Medical School of the University of Strasbourg. Edited by Mathias Duval, M.D. Translated from the second and revised edition by Robert Amory, M.D. Boston: James Campbell. London: Baillière, Tindall, & Cox, 1876. Pp. 531.
4. *A Text-Book of Physiology.* By M. Foster, M.A., M.D., F.R.S., Praelector of Physiology and Fellow of Trinity College, Cambridge. London: Macmillan and Co. 1877.
5. *A Course of Elementary Practical Physiology.* By M. Foster, M.D., F.R.S., Assisted by J. N. Langley, B.A., St. John's College, Cambridge. London: Macmillan and Co. 1876.
6. *Outlines of Practical Histology.* By W. Rutherford, M.D., F.R.S., S.L. and E., Professor of the Institutes of Medicine in the University of Edinburgh. Second edition, with sixty-three wood engravings. London: J. & A. Churchill, New Burlington Street, 1876. Pp. 194.
7. *A Course of Practical Histology.* By Edward Albert Schafer, Assistant Professor of Physiology in University College, London. London: Smith, Elder, & Co., 15, Waterloo Place, 1877. Pp. 276.

The long list of books which heads this reviews affords some indication of the increased attention which is being paid in England to physiology and science, and still more of the increased importance which the science has acquired in the curriculum of medical studies: the latter being indeed a consequence of the former. We should be inclined to imagine that the popularity of a science—the zeal with which it is studied—would be indicated in a rough kind of manner by the number and the quality of the elementary books published upon it; and abundant supply of text-books indicating an abundant demand and numerous authors, implying still more numerous readers. This is certainly the case with physiology.

A quarter of a century ago there were, it is true, a few diligent workers in England who from time to time contributed to physiological literature, but no English school of physiology worthy of the name existed. No physiological laboratories were to be found in our schools; generally no attempt was made to teach the student how to observe for himself the phenomena of the living organism, and one or two at most were alone found to abandon the attractive, the noble, sometimes the lucrative, profession of medicine for the study of physiology. Corresponding to this state of matters our text-books were few, and as a rule, but imperfectly represented the science. *Nous avons changé tout cela;* we are living in a period of high physiological activity, a band of steadfast investigators has for some time been engaged in emulating in England the work of their Continental fellow-workers, and the teaching by lectures and diagrams alone has given place to a system of practical instruction which aims at teaching how to observe. The facts which have been discovered by physiologists are not merely communicated to the student as if they were abstract dogmas, but he is more acquainted with the methods of inquiry which have led to the results, and is thus trained in experimental methods, which when afterwards applied to the objects of practical medicine must yield the most valuable results. Physiology thus becomes not only the great scientific basis of medicine, but physiological study serves as the most valuable discipline for those whose life is to be devoted to the actual practice of medicine. This change in physiological teaching is reflected in many of the books before us.

We hail with great satisfaction the appearance of the ninth edition of *Kirke's Handbook of Physiology*. This work has always been a great favourite with the English student; of late years, however, the work had become valueless as an exponent of the actual state of physiological knowledge; past editions were disfigured by innumerable errors of omission and commission. Mr. Morrant Baker has, however, obviously determined to remedy this by almost rewriting the book, and we have to congratulate him upon the success which has attended his undertaking. The work is generally very correct, very readable, and admirably illustrated; we think it is perhaps the best book for the average student of medicine.

The second work on our list, *The Elements of Human Physiology*, by Professor Beauvis, is a much more complete treatise on physiology than the English work to which we have just referred. It is written with great clearness; without aiming at the high philosophical standpoint which characterises the very advanced text-book on human physiology by Professor Hermann, it yet gives a very readable and generally correct account of the actual facts of the science. Students who are acquainted with French will be able in Beauvis' work to obtain a fuller, more lucid account of the physiology of the organs of sense, of the organ of voice, of the cranial nerves, than can be found in any other recent text-book with which we are acquainted. Though containing more than eleven hundred pages, this work is, in consequence of the thin paper upon which it is printed, far from an unwieldy volume; its abundant illustrations have been admirably chosen. It is a book which we should strongly advise the medical man who can read French to add to his library.

The American translation of Küss's *Course of Lectures on Physiology* is a handy little volume of 520 pages, and possessed of some originality, but is not a work to be placed in the student's hands, and for the student alone is it, we presume, intended. The work pretends to be based upon philosophical conceptions, but these often strike us as most shallow.

Some parts of Professor Küss's work are intelligent enough epitomes of the subjects on which they treat; the work is however disfigured by the crude and ignorant generalisations to which we have drawn attention, and is expressed in language which may be American, but is certainly not English.

The *Text Book of Physiology*, by Dr. Michael Foster, is the most recent of the systematic works on physiology which have appeared. All who know the author of this work and who have read some of his other published writings, especially his wonderfully-expressed *Primer of Physiology* (which to our mind is clearly the best of all the Primers which Messrs. Macmillan have published, good though they all are) or his *Elements of Embryology*, written in conjunction with Mr. Balfour, will anticipate that a systematic treatise by him such as that which we are now reviewing must possess peculiar excellence. The book is indeed a very good one—in some respects thoroughly original in its treatment, nearly always happy in its elucidation of difficulties, always quite up to the most recently discovered facts, but sometimes a little disappointing in passing over matters which the author would allow required treatment, and exhibiting here and there marks that it was produced a little under pressure. The work contains 559 pages, and consists of an Introduction, of four Books, and an Appendix. Book I. treats of the blood, the tissues of movement, and the vascular mechanism. Book II. is on the tissues of chemical action with their respective mechanisms, and nutrition. Book III. is devoted to the central nervous system and its instruments. Book IV. deals very briefly with the tissues and mechanisms of reproduction. The Appendix contains an admirable account of the proximate principles of the body.

Amongst the subjects which we think deserve a much fuller consideration than they have received we would specially mention the functions of the cranial nerves.

Dr. Foster's work is illustrated by very few diagrams; he has, as we think very properly, omitted all histological drawings, as these properly find a place in text-books of anatomy; we are not quite convinced of the wisdom of omitting diagrams of instruments of research. Doubtless Dr. Foster has not done so without good reason, perhaps arguing that at the present time when all who teach physiology thoroughly explain the construction of instruments of research and actually exhibit them to their classes, there is little need of diagrams, a few moments' inspection being far more instructive than the prolonged study of a diagram. We are of opinion, however, that as all readers have not access to the actual instruments, and at any rate all students do not carry away with them an indelible mental picture of all they have seen, there is an advantage in devoting some space, even in a systematic elementary work, to an exposition of experimental methods, illustrated, when the occasion requires it, by suitable diagrams.

We have noted a few errors in Dr. Foster's book, as for example one at page 176 concerning trypsin, a small one at page 185 concerning the pressure under which bile is secreted in the guinea-pig; these are however insignificant.

We would urge all our readers who are convinced that physiology is the basis of all rational medicine, and that every accession to the storehouse of physiological knowledge brings fresh certainty and fresh light to them in their work, to read attentively Dr. Foster's admirable work.

To Dr. Foster and his pupil, Mr. J. N. Langley, B.A., we owe a capital little work entitled *A Course of Elementary Practical Physiology*, which will be of great service to many teachers of physiology in England, pointing out how well histological and physiological instruction may be combined in the practical classes which have every where been organised.

The *Outlines of Practical Histology* by Professor Rutherford are intended to be guides to histological demonstrations. The work is well illustrated, and its plan and execution evince that the author has devoted great pains to its preparation.

After a short Introduction, in which the apparatus required and the methods of preparing the tissues generally are described, there follows an elementary but useful description of the microscope. This is succeeded by Part III., in which, under the title of "Histological Demonstrations," the method of preparing the various tissues and organs of the body, and the chief features to be observed, are succinctly described. The book is likely to be of great service to junior teachers of practical histology, who are here afforded an opportunity of profiting by the experience of one who has long very successfully taught practical histology to medical students. In Part IV. of his little book, which contains "general considerations regarding histological methods," Prof. Rutherford devotes forty-six pages to a more elaborate description of the general methods of preparing tissues and organs than could be given under the head of demonstrations.

The last book on our list, entitled *A Course of Practical Histology*, by Professor Edward Schäfer, is one which will, we are sure, help to maintain his own reputation as a histologist of merit, and that of the distinguished school in which he is a teacher.

Mr. Schäfer's book is essentially a treatise on microscopic *technique*, sufficiently full, very clearly expressed, and beautifully illustrated. Were we in ignorance of the fact, we could from the most cursory perusal of this book conclude with confidence that it was the work of one who never described a method or gave a direction which was not supported by his own personal experience.

Some of the works which we have brought before our readers in the course of this review are, we think, evidences of the increased zeal which, as we pointed out at the onset, characterises the present state of physiology in England. Of the five English works reviewed three are intended as guides to actual observational work, and two deal with the general principles of the science. Everywhere now the fact is acknowledged that real instruction in biology can only be obtained by personal contact with, and personal study of the object of study.

> "Segnius irritant animos demissa per aurem
> Quam quae sunt oculis subjecta fidelibus."

And how great and how important will the results of such study be, if the very means for carrying it on are not denied us by the ill-judged subservience of our legislature to the prejudices of some enthusiasts among the mob!

Charité Annalen, I. Jahrgang (1874). Berlin, 1876.

We heartily welcome the revival, under a slightly changed name, of the Hospital Reports from the Charité at Berlin. Very valuable articles appeared from time to time in the now extinct *Annalen des Charité Krankenhauses*, amongst which need only be mentioned Schultzen and Riess' work on phosphorus poisoning and acute yellow atrophy, and Virchow's essay upon the changes in the salivary glands. The writers in the present volume are the more to be encouraged because they deal chiefly with the work done in the Charité; and thus undertake the proper function of hospital reports, the recording of observations made within the walls of the building.

The remark of the Frenchman upon an Arabic book, *Ce livre-ci commence à la fin*, applies in this case; for beyond all doubt the most important article is the last in the volume, that contributed by Virchow. It is most desirable that so experienced a morbid anatomist should leave on record his method of making examinations after death. Even though some of the details may not be approved by all, yet the general rules are most excellent. Among them may especially be commended that which insists upon the importance of following a certain order, a constant method, in the examination. There are of course some cases in which an exception to this rule must be made, but care should be taken not to make the exceptions become the rule. The best guide when and how to make the exceptions will be a knowledge of the reasons upon which the rules are based. Virchow instances the rule for taking off the calvaria: generally it comes away from the dura mater without trouble; but in children and some grown-up persons the calvaria is so glued to the dura mater that both have to be removed together. In this case the brain of the infant would be destroyed if a foolish adherence to general rules were persisted in.

The rules for the examination of the brain, spleen, lungs, and liver are exceedingly good. If there be one point open to criticism, it is the direction that the bowels should be removed from the belly last of all, and this chiefly on account of the trouble which the morbid anatomist must have in hindering their contents from being spilt upon the remaining viscera, the table, the body, and even the persons of the bystanders. Now for several years past it has almost daily been our custom to remove the bowels as soon as the examination of the chest and of the spleen had been completed; and in no case, save where a very unexperienced person was employed, has there been any trouble as regards the escape of the fæces. There is this great advantage in taking out first the large and small intestine, that the kidneys in position with their vessels and ureters are left for a further anatomical examination, and a leisurely dissection may be made of them; all this is utterly destroyed if the kidneys be taken out before the bowels, as we have seen commonly practised in Berlin.

Dr. W. Zuelzer gives an article with observations on the excretion of phosphoric acid in the urine in pyrexial diseases. Eleven cases are recorded, the amount of urea and phosphoric acid at varying periods and varying temperatures of the disease are added together, with the amount of the whole, and the ratio of the nitrogen to the phosphoric acid calculated from these data; that the nitrogen is to the phosphoric acid as 100 : 13·5. This recalls the worst days of Louis, but we are glad to see that the writer is not satisfied with this mere collection of figures, but adds a few remarks to show that during the pyrexia a less amount of phosphoric acid is excreted in proportion to the nitrogen. The writer does not seem to have been acquainted with Dr. Gee's interesting observations, which show that the phosphoric acid entirely disappears from the urine of ague during the acme of the paroxysm. The amount of phosphoric acid during convalescence seems according to Luelzer to be much increased.

A report of the midwifery department is sent by Dr. Beinlich, the statistics of which are given in a very full and complete manner. As might be expected, only one-tenth of the women delivered were married. Nearly one half (476 out of 995) were between the ages of 20 and 25. Ten women were brought to bed between the ages of 40 and 45; and, positively, one woman, a widow, at the age of 51. The statistics of the various presentations are carefully given, and the number of times that operative interference, or the like, was needed are stated at length; and the paper ends with a table of weights and anomalies of the fœtus, and the number of deaths in child-bed, which gives about 4·5 per cent. in this department of the Charité.

Lewin gives a statistical account of the venereal affections treated in the Charité under the heads of gonorrhœa, soft chancre, and hard chancre. At the end of his article he discusses the question whether circumcision would be useful in guarding against disorders of this kind. He comes to the conclusion that it would not, but for the reasons we must refer the reader to the original article. A case of parasitic sycosis and a case of persistent arteria hyaloidea are also given.

Henoch, so well known amongst the writers on children's diseases and diseases of the belly reports upon the statistics of the children's department. Out of 633 children, 246 died, and this enormous mortality is, as may be looked for, caused entirely by the deaths of infants of tender age. Out of 177 children under six months 133 died, and the percentage continues very high until the third year is reached. This statement may serve to throw light upon the high mortality lately noticed in a charitable institution in Carlisle Place, and to show that even when all the appliances which science can suggest are at hand, there is nothing to make up for the lack of the mother's care and devotion which Nature has clearly made necessary for the well-being of infants. Nothing would be a greater failure in practice than Sir Thomas More's scheme for the bringing up of children in Utopia.

Scheweigger says a few words on the ophthalmic operations for cataract, of iridectomy, and for squint.

Some observations from Traube's clinical wards also are given and Joseph Meyer offers some important clinical observations upon the percussion of the spleen; for this the observer strongly recommends the hammer rather than the fingers.

Eichhorst details at length some rare cases of diseases of the nervous system. The first is one of hæmorrhage into the spinal chord, attended, as Eichhorst insists, by diseases of the blood-vessels, and in this case caused by miliary aneurysms. He describes also a case of syphilitic disease of the basilar artery and consequent softening of the pons varolii, and several cases of involuntary movements of the limbs and disease of the brain.

Ewald reviews the various arguments for and against operative interference in pleurisy, the various instruments to be used and the method of using them. In simple pleurisy he approves of the rule not to operate before the end of the fourth week, unless indeed some danger to life arise; in the first case the operation may be done without hesitation. From January 1, 1860, to June 1, 1875 there were 250 cases of pleurisy treated in the Charité. Thirty of these died. Two hundred and four were cases of simple pleurisy: 200 were tapped and not one did ill. The four which were not tapped died from compression of the lung and bronchitis and peribronchitis. The others were cases of empyema, and in these the mortality was high, more than one half, whether tapped or not, dying.

In taking leave of this number we cannot do better than recommend it to the notice of our readers; and we wish it all the success that has fallen to its older and longer established contemporaries.

A Course of Operative Surgery with Plates drawn from Nature. By Christopher Heath, F.R.C.S. London: Churchill.

We confess this work has disappointed us. Its author deservedly ranks high among practical surgeons, and he has an equally well-earned reputation as a surgical anatomist. He has taken the trouble to have various operations depicted by means of coloured plates, "drawn from nature." The result does not equal the anticipations we had formed. To speak first of the plates. Mr. Heath tells us they were drawn from operations he performed on the dead subject. But for this assurance, we should have thought they were drawn by an artist guiltless of any knowledge of anatomy, and who had been left very much to his own devices. For instance, Fig. 1, *b*, in Plate IV. represents the incision for ligature of the third part of the subclavian artery. This is placed so that nearly the whole width of the clavicular part of the sterno-mastoid is exposed. Fig. 1, *a*, certainly does not convey to the mind of the student an accurate idea of the relation of the axillary vein and brachial plexus to the axillary artery. The vein almost invariably overlaps the artery, and both it and the plexus are on a plane anterior to it. In Plate VI., Fig. 1, the incisions for ligature of the common iliac artery and for strangulated femoral hernia are much too short, and neither, so far as we understand the drawing, is exactly where it should be. Plate VIII., Fig. 1, puts the incision for tying the posterior tibial artery at the ankle, exactly over the tip of the internal malleolus. Plate X., Fig. 6, is drawn to show a foreign body in the œsophagus, but undoubtedly the body is depicted in the pharynx; for it bulges at the level of the thyroid cartilage where it might be reached, and extracted through the mouth. Plate XII., Fig. 1, represents the incision for lateral lithotomy. The drawing is altogether "out of drawing," the incision is too far forwards, and its lower end seems, as far as we can judge, to pass well into the thigh. We do not think that Mr. Heath himself cuts with such a knife as that drawn in Fig. 2. In Fig. 3 the operator seems to have succeeded in firmly grasping his own finger. Even in the letterpress, for which Mr. Heath is entirely responsible, are to be found more inaccuracies than should be permitted in a work of this kind. Thus at p. 14 we are told the ulnar artery lies on the flexor sublimis digitorum, and, lower down, the fore-arm is called the arm. At p. 25 we are taught that in removing the breast, if disease has involved the pectoralis major, " it may be necessary to remove nearly the entire muscle." No doubt the writer means " the entire thickness of the muscle." In giving the anatomy of the external iliac artery (before the common has been described) the author says " it extends from the bifurcation of the common iliac artery to Poupart's ligament": but he gives here no point at which the bifurcation occurs; nor any spot in the length of the ligament towards which the vessel runs; and he makes no mention of the deep circumflex iliac vein, as crossing the artery just before its termination. Many of these may seem small matters to be critical about; but we refer to them because they indicate, when coupled with the defects we have mentioned in the plates, a certain degree of looseness and carelessness where accuracy and painstaking were above all things necessary. We have spoken thus freely of this instalment of Mr. Heath's work in the hope that in the succeeding numbers the defects we have pointed out may be avoided.

Clinic of the Month.

A New Saw.—Mr. F. A. Stohlmann has invented an entirely novel saw, which is now made by Messrs. Tiemann, of New York. It is intended to replace the chain saw in common use, and is entirely free from the tendency to bind, kink, and break, which characterises the latter instrument. It consists of two handles, connected by a wire of cast-steel, on which are strung a series of steel beads with sharp cutting edges. The instrument might indeed be called a file, quite as appropriately as a saw, and its action on a bone is said to be more like that of the first-mentioned tool, in the absence of such rough edges as are made by the saw in common use: no needle is required to carry it through or round a bone, and its beads can be readily strung on to a new wire in case of a break. Another advantage lies in the fact that the beads by their free rotation present fresh cutting edges; and still another is the considerable difference in price between this instrument and the ordinary chain-saw. (*Medical Press and Circular,* March 28, 1877.)

The Relation of Alcoholism to Uterine Disease.—Dr. Doyle read a paper on this subject before the Dublin Obstetrical Society, the object of which was to show that the habit of taking alcoholic stimulants by females with ample means frequently depended on a diseased condition of the uterus, and that by curing it, the cause being removed, they gave up using stimulants, as was proved by cases he recorded. Another case recorded by Dr. Doyle showed that when alcoholic drinks are taken to appease a depraved appetite, they did not produce a disease of the uterus, except as in the case in question, a congestion depending on a mechanical cause from enlarged liver. Although not disapproving of the use of alcoholic beverages in moderation, or when ordered medicinally, he avoids prescribing them as much as possible, and substitutes in such cases as need them a mixture containing sp. vin. rect. with sp. ammon. aromat. or tinct. digitalis. In the discussion that followed the reading of the paper various speakers, as Dr. Denham, Dr. McClintock, and Dr. Kidd, expressed the opinion that uterine disease often gave rise to a craving for stimulants, nor was this to be wondered at, since a free dose of alcohol affords more relief in many cases of dysmennorrhœa than any other remedy, and as the affection is constantly recurring, it is not improbable that patients suffering from it should at length fall into the habit of taking it when it was not required. Dr. Kidd remarked that those who had derived benefit from morphia very frequently used it as freely and intemperately as others who had been taught the use of alcohol. The practical lesson to be derived from the subject appeared to be that physicians must cultivate their knowledge of uterine diseases, and by curing them do away with the desire for stimulants. (*Medical Press and Circular*, April 4, 1877.)

Salicylate of Atropia and its Application to Pharmacy.—In a paper read before the Pharmaceutical Society of Ireland, Dr. Tichborne observed how difficult it sometimes is to obtain in the most simple preparations such an article as shall meet all the requirements of the physician, the surgeon, and the pharamaceutist. Thus whilst a particular preparation may just hit off the views of the prescriber, it may be devoid of keeping properties. A striking instance of this clashing of requirements occurs in the solutions of atropia contained in the British Pharmacopœia. There are two of them both of the same strength (gr. iv. ad ℥j.) as they are intended for the same use in ophthalmic surgery. The first contains one-eighth part of rectified spirit, and keeps fairly well, but it is extremely irritating to the eye. The second contains no spirit, but has the disadvantage that it will not keep. Dr. Aquila Smith some time ago suggested the use of camphor-water as a solvent for the atropia, which answers well. Dr. Tichborne, however, whilst conducting some experiments on salicylid acid, conceived that its antiseptic properties might render it valuable as a solvent of the alkaloid. By mixing atropia, 270 grains, with salicylic acid, 130 grains, a salt was obtained soluble in twenty parts of water, and which is found to keep unaltered for an indefinite time, whilst its mydriatic effects are well marked, and it possesses no tendency to irritate the eye. (*Medical Press and Circular*, February 21, 1877.)

Treatment of Entropion.—In a recent report by the surgeons of the National Eye and Ear Infirmary, Dublin, the treatment of entropion and trichiasis by Dr. Berlin's method is spoken of in satisfactory terms. As this operation is not generally known, a description of it may be interesting to our readers. A horn spatula having been inserted under the lid by an assistant, so as to protect the eyeball, or, still better, a Knapp's clamp having been applied, an incision is made extending the entire length of the lid, about three millimetres from its margin. This incision divides at once the skin, muscle, cartilage, and conjunctiva. The skin and muscle along the upper edge of the wound is now to be pushed up with the handle of the knife, or dissected up so as to expose the cartilage. The cut edge of the latter is then seized at its centre by suitable forceps, and with a scalpel or scissors a narrow oval piece, extending the whole length of the cartilage, and from two to three millimetres in extent at its broadest part, is excised. A portion of conjunctiva, corresponding in size to the bit of cartilage removed, must necessarily be taken away with it. A piece of skin along the upper margin of the wound may then be excised if it be feared that the effect will be insufficient; and finally, the lips of the wound may be closed with three or four points of suture, or a bandage used instead of sutures. An objection has been made to this operation, that it is liable to produce lagophthalmos and imperfect lubrication of the margin of the eyelid, in consequence of the injury to the Meibomian glands, but in practice such a result has not occurred. The operation is stated to be simple, rapidly performed, and to leave no disfigurement. (*The Lancet*, April 14, 1877.)

Treatment of Scrofulous Lymphatic Glands by a painless Electrolytic Caustic.—Mr. C. H. Golding-Bird of Guy's Hospital refers to the pathology and to the general methods of treatment in use for the cure and removal of scrofulous and enlarged lymphatic glands, as by the knife, the application of caustics, &c. The plan he suggests depends upon the production of chloride of zinc in the tissues of the body at the expense of the chlorides in the serum, which are caused to unite with a slip of metallic zinc thrust in at the spot destined to be destroyed. He refers to the action taking place in a Smee's battery, and points out that if silver and zinc plates be placed one on either side of a piece of flesh, the chloride of sodium in the fluids undergoes parallel decomposition to the sulphuric acid in the battery, chloride of zinc being formed at one electrode and soda at the other. The result is that in the course of a short time the flesh under the zinc plate will be no longer red, soft, and alkaline, but will be converted into a grey friable material, strongly acid to test paper, while the pressure of the soda under the silver plate may be proved by its strongly alkaline reaction. To carry out this plan of treatment the surgeon must be provided with some thick silver foil, some very thin sheet zinc, and some fine copper wire. The zinc is cut into slips of appropriate size, as one inch long and a quarter of an inch wide, pointed at one end and pierced with a hole at the other. The slips are passed through a sheet of gutta percha or cork, which can be laid flat on the skin and secured by strapping after the slips have been introduced. To the slips the copper wire is attached at one end and by the other to the disc of silver, which may be the size of a shilling. The latter must then be placed on a raw surface produced by a blister, whilst the zinc slips should be introduced into a sinus, or a prick with a bistoury may be made. Four or five days are usually enough for each application. The blistered surface will then be found drier, strongly alkaline, and in part healed. On removing the zinc, a grey slough will be seen in lieu of the red granulation tissue, and strongly acid to test paper. At times this slough will come away with the piece of zinc, or it may be detached with forceps. (*Lancet*, April 21, 1877.)

Hydrobromic Acid.—Dr. W. M. Campbell, of Liverpool, adds his testimony to that of Dr. Forrest, of New York, in favour of hydrobromic acid. As a solvent of quinine he has found it to be most useful. In a case of pyæmia in hospital eight-grain doses of quinine every six hours were easily borne for several days by the patient, a small quantity of the acid, thirty minims, being added to each dose. With its help also many patients, especially ladies, who were unable to take quinine without immediate tinnitus, can take large doses. Dr. Campbell has also ordered the hydrobromic acid with the perchloride of iron for a lady in whom iron always produced flushing and headache, with the happiest effect. He has not found it act so well as a cough medicine, which is one of the uses suggested, except in cases of pertussis in children. As an adjunct to chloral in hysterical insomnia it seems to be equally efficacious with bromide of potassium. The doses he usually gives are half a drachm with quinine and iron, five or ten minims to children, and a drachm with ten grains of chloral as a draught. Dr. J. F. Fry, of Swansea, also finds that large doses of quinine may readily be taken with hydrobromic acid as a solvent by those in whom the symptoms of cinchonism are easily produced. (*British Medical Journal*, April 21, 1877.)

Treatment of Auditory Nerve Vertigo.—Dr. Gowers dwells upon the importance of correctly appreciating the several factors which may lead to auditory vertigo, and points out that when the special cause has been ascertained considerable benefit may be derived from appropriate treatment. The direct treatment of labyrinthine affections is of course a subject for the special aural surgeon, but gouty and syphilitic conditions should not be overlooked, and the remedies usually prescribed in these cases are of great service. When symptoms of gastric disturbance are present the exhibition of an antacid is often effective. Local irritation may be lessened by the application of a blister behind the ear, and any undue sensitiveness of the grey matter of the equilibrial centre must be lessened by the bromides of potassium and ammonium, and belladonna, and he suggests the advisability of trying the effects of salicylate of soda, which seems to exert a special influence on this centre. (*Ibid.*)

Periodic Neuralgia not dependent on Structural Lesion.—Surgeon-general Francis remarks that in discussing the treatment of refractory chronic cases of neuralgia not dependent on organic disease or injury, when the return of pain has become periodic, it may frequently be heard both from patient and physician that everything has been unavailingly tried, and that the sufferer, tired out at last, has decided on going abroad in view of seeing the effect of travelling and change of scene. The practitioner who has been accustomed to deal with such cases in tropical climates naturally inquires to what extent the anti-periodic remedies—notably quinine and arsenic—have been pushed. The answer will probably indicate doses considerably less than those which Dr. Francis has been in the habit of prescribing, with—in cases where the drugs were not contra-indicated —almost unvarying success. It is to encourage those who have not had this experience, to try the effect of similar doses that Dr. Francis relates his. During a residence extending over several years in India he has frequently given in suitable cases from ten to twenty grains, and even thirty grains of quinine; and where this has been ineffectual, from twenty to thirty minims of Fowler's solution of arsenic have succeeded in staving off the attack.

The habit once broken through, smaller and gradually diminished quantities of either drug (whichever suits the particular case) will be sufficient, but the remedy must be continued for a few days. In some instances quinine and arsenic together (from six to ten grains of quinine, and ten to fifteen minims of Fowler's solution) will produce the desired effect, which neither would have produced singly. It is important to remember that when quinine is given by the mouth the administration should be preceded by a suitable purgative (unless, indeed, this be clearly contra-indicated). Hypodermic injection with the neutral sulphate of quinine is, however, the better mode (especially where the stomach is irritable), as a fourth only of the quantity need be used, and the result would be secured more speedily. The same treatment in cases of neuralgic gout, where the attacks have shown a decided tendency to become periodic, has been adopted by Dr. Francis. (*Ibid.* No. 1382.)

Extracts from British and Foreign Journals.

The Actual Cautery in Spasms, Paralysis, and Epilepsy.—In a paper on this subject, in the *New York Medical Journal,* Dr. Dupuy observes, that he by no means wishes to extol the use of the actual cautery in these diseases as an unfailing remedy; on the contrary, whilst there are species in which it is useful, there are others in which it does no good but harm; a thorough investigation into the physiological pathology of the affection should be made in all instances. He chose for his inquiries confirmed chronic cases, and had the opportunity of treating these in Dr. Mason's ward in the Hospital for the Paralysed and Epileptic, on Blackwell's Island. The first case of this kind was a young man about twenty-two years of age, a book-keeper by occupation, who suffered from spasmodic painful wry neck, contraction of the right sterno-mastoid and subjacent tissues. He had been in that state for a year. He could find no rest in bed, had to remain "fixed up" in an arm-chair; walking produced intense pain. He had received treatment at the hand of various physicians, treatment consisting of electricity under every form, and almost all the bromides; also subcutaneous injections of morphia, atropia, &c. Three days after the application of the actual cautery the man felt that he was improved and returned to have another application. Six applications were made and he was radically cured, having remained free from the disease for four years. During this treatment he abandoned all other medicines. Dr. Dupuy records several cases of epilepsy and partial paralysis. All of them, it is worthy of notice, had tender and sometimes hyperæsthetic spots along the spine, which he thinks it reasonable to suppose were due to the meninges being more or less diseased, and possibly also the spine. The rules he follows in applying the cautery are essentially those of M. Brown-Séquard. The instrument has to be heated to whiteness; it must be shaped like an olive; it must not be allowed to burn the skin, but is passed rapidly over the space to be acted upon, so that after the operation is over nothing is seen but a *white line,* very much resembling a scratch with a finger. So applied it is never painful. It can be repeated every other day, as there are no scars and no irritation left. The necessity of observing these rules is obvious, as the object of the operation is to act on the terminations of nerve-fibres in the skin, but not to destroy them; hence it is clear that the method of first applying ether spray on the spot to be cauterised, so as to deaden the pain of the cautery, mars the good effects of the application of the instrument, because the ether spray is itself more painful than the actual cautery when the latter is used after the manner stated above, and moreover it anæsthetises the nerve ends upon which it is desired to act, so that the cauterisation becomes useless. (*New York Medical Journal,* Jan. 1877.)

Obesity and Amenorrhœa of Young Women Cured by Milk Diet.—M. Tarnier was consulted, some time ago, by a young woman who was suffering from albuminuria. She was very fat, and had not menstruated for several months. He ordered only the rigorous employment of a milk diet. Some months later he saw her again, and was surprised to find her quite slender in form, and presenting all the appearances of health. She had followed his directions to the letter, and the amelioration of her symptoms had been rapid. First the albumen disappeared from the urine, and then the precocious obesity disappeared. Menstruation was gradually re-established as she grew thin, and her periods had begun to occur at normal intervals. Shortly afterwards M. Tarnier ordered milk diet to a young woman who was very obese, and in whom there was absolute suppression of the menses. She had no albuminuria. The patient lost flesh rapidly, and menstruation was perfectly re-established. These cases possess much practical interest. Milk diet must be classed among the alterative medications, but it has the advantage of being well borne by the stomach and not of disturbing the general health. In treating albuminuria with milk, M. Tarnier orders, for the first day, one quart of milk with two portions of food; for the second day, two quarts of milk and one portion of food; for the third day, three quarts of milk and one portion of food; for the fourth day and afterwards, four quarts of milk and no food at all. In the treatment of obesity it is not necessary to adhere so rigorously to the milk diet; a small quantity of the ordinary food may be allowed. The patient may take the milk in such quantities and at such times as she likes, provided she takes the prescribed quantity per diem. The duration of the treatment will vary in different cases. If diarrhœa set in, it is a sign the treatment is not well borne. When the desired effect begins to show itself it continues even after the treatment is suspended. (*Journal de*

Méd. et de Chir., vol. 47, 1876; and *New York Med. Record*, No. 327.)

Psoriasis of the Tongue.—M. Devergie considers that this is an erroneous name, differing from psoriasis of the skin after which it is called, in not being accompanied by inflammation nor by any induration of tissue. He designates it "white epithelial patches" of the tongue. He is disposed to attribute them to mercurial treatment, and finds they are particularly liable to occur where large doses of the proto-iodide have been prescribed. The affection usually manifests itself, first as a small white milky patch, from one-half to one centimetre in diameter, no inflammation being present. There is no pain or inconvenience, and patients sometimes allow several years to pass before seeking advice. He recommends as being very effective in the treatment a caustic application, prepared by taking four parts of powdered crystallised protonitrate of mercury dissolved in eight of distilled water, which is then gradually brought to the boiling point. It is then removed from the fire, and two parts of nitric acid are added drop by drop, stirring the while. The patches are lightly touched with this every third or fourth day; the patient keeping his tongue motionless, and then repeatedly gargling the mouth with water. Three or four applications usually suffice to disperse the patches. When ulcerations are present, it is surprising to observe how soon they are cured; but more time and a greater number of applications are then required. Gargles of chlorate of potash should also be used daily. (*Union Médicale*, No. 153; and *Med. Gazette*, No. 1386.)

The Digestion and Dilution of Cow's Milk in the Artificial Feeding of Children.—A good paper on this subject appears in the Proceedings of the Medical Society of the County of King's, Brooklyn, New York, by Dr. Jerome Walker. The ingredients of milk, water, casein, butter, sugar, and salts vary in their relative proportions under different circumstances. In winter water diminishes, bulk increases. In summer water increases as also do the solids. The afternoon's milk is one-quarter richer on the average than the morning's, and the last portion of a milking—the strippings—is the richest. As long as the food of the cow is sufficient, nutritious and digestible, milk exhibits great constancy of composition; various substances, however, as cabbage, onions, turnips, wormwood, madder, may render the milk indigestible for the child by changing its odour, taste, or colour. Fermented food is totally unfit for the animal, yet some garbage and brewer's grains are much in use. The main adulteration in cities is water; the average milk in New York having one quart of water added to each gallon. A large amount of cream is *no* indication of the greater richness of milk; a small amount of cream is often accompanied by a large amount of casein and salts. Hence poor milk may need more dilution than good on account of excess of casein. Very rich milk may need it owing to an excess of fat. The average pure milk may need it owing to an inherent or acquired inability in the child to digest it without. Fresh *warm* milk is generally acknowledged to be most easily digested owing to its retention of its unexplainable life-principle and the fact that it is quite thin, thickening as it cools. Casein is not coagulated by heat alone, and pepsine coagulates it but slightly. Boiling thins milk, breaks up some of the fat globules, renders others lighter, and drives off the contained air. Warmth and contact with the smallest quantity of milk already changed favour its coagulation. Boiled milk answers well in diarrhœa and scalded in constipation. The hardened fæces common in city-bred children fed mainly upon milk, are usually regarded as being caused by the quantity of casein in cow's milk. It is quite as often due to a deficiency of sugar, albumen, or oil. If casein is always the offender, how can the good results of the use of buttermilk in severe diarrhœas of children be explained? In many cases Dr. Jacobi's method of feeding will answer, which consists in giving sweetened water, oatmeal, or barley before feeding; or if the casein does not all digest, then adding mucilage with sugar and salt, and antacids if necessary. Dr. Chapman recommends the following as giving excellent results:—Take of condensed milk two teaspoonfuls, water twenty-four (or if plain milk is used water one-half), lime-water four, powdered sugar one-half teaspoonful, and a small pinch of salt. Bring the water to a blood-heat; mix and stir. The casein is now held in emulsion, the stability of which is aided by the salt. Professor Buckingham adds one or two grains of bicarbonate of potash to each ounce of milk. In other cases pepsine, muriatic acid, glycerine and water may be tried. The employment of cream has many advocates. Dr. Bailey gives cream one-third, sweetened water two-thirds. Another writer, one ounce of cream and one of aq. calcis. In many families some farinaceous food, as arrowroot, cornflour, &c., is added to the milk with good results. The addition of salt is generally recommended, and of the phosphates, when the cows have been fed on poor pasturage, Dr. Wiggin's phosphate mixture, which is largely used in America, consists of the following ingredients:—Phosphate of lime four parts, phosphate of soda one-half part, hypophosphate of magnesia one-half part, chloride of sodium two parts, carbonate of potash two parts. He commences with one part of milk and two of water, and adds cream from a quantity of milk equal to that of the water added; he also adds a pinch of the phosphate mixture and forty grains of milk-sugar to each meal. The rules of the Obstetrical Society of Philadelphia, issued a few years ago for the management of infants in the hot weather, were these:—"If the milk is known to be pure, it may have one-fourth part hot water added to it; but if it is not known to be pure no water need be added. When the heat of the weather is great the milk may be given cold. Do not skim the milk. In very hot weather boil as soon as obtained, and then place in cool place. Whenever pure milk cannot be obtained give condensed milk." Many think the pure cow's milk should not be diluted at all. (*Proceedings of the Medical Society of the County of King's Brooklyn, New York,* March 1877.)

Cure of Tuberculosis of the Lungs by Inducing Calcification.—Dr. Both, of New York, states that this method of curing tuberculosis of the lungs was suggested by the occurrence of such cases in nature, and he proceeded to try whether calcification could not be induced artificially. He commenced treatment by clearing the bronchioles and vesicles as much as possible, employing the muscles of the thorax to expand the chest and thus force air into the bronchioles and vesicles by suction. The result of this is a long, deep cough, with increased expectoration, which is at first of a slimy mucous character, afterwards more dense and cheesy—at times bloody. The muscles are exercised in order according to their layers and their proper actions; neither machines, clubs, nor dumb-bells are employed, the weight of the body alone being used to increase the power of suction which becomes greatly increased by practice and correct application. In the case of consumptive patients, with nearly paralysed muscles, their use requires a great deal of careful and intelligent guidance on the part of the physician; and attention must be paid to the mental, physical, and nervous condition of the patient. Too much force causes pleurisy and hæmorrhage, too little is without effect on the extreme parts of the lungs. This constitutes the local treatment. The constitutional treatment is more difficult and complicated. The state of the chylopoietic viscera must be attended to, the products of decomposition in the blood oxidised by the use of citric or other vegetable acids, and lime and silica freely supplied to the organism by the consumption of vegetables containing them. He attributes the value of the old remedies of extract. graminis and album græcum or the white excrement of dogs, to the organic salts of lime they contain. Another lime-containing plant is the Achillæa millifolia. Thistles contain silica, and plants growing in swamps, sulphates. The results of eighteen years experience have led him to the conclusion that no case of chronic affection of the lung is curable, unless vesicular respiration can be re-established; and that no case is curable in which a nidus of pus exists outside the lung-tissue proper, whether this be a lymphatic gland or an abscess in some other part of the body. The average time required for a lung to calcify is about six to twelve months. (*New York Medical Record*, Feb. 17, 1877.)

Remedy for Headache.—Common idiopathic headache, Dr. Lockeridge remarks, comes as near being an opprobrium medici as any other common and ordinarily innocuous complaint in the catalogue. He describes the characters and the usual mode of treatment of sick headache, and then adds that having observed that bromide of potassium in twenty or thirty-grain doses, and tincture of aconite root separately, relieved more cases than any remedies he had previously tried, he experimented with large doses of the drugs combined. For several years he has been in the habit of giving in these cases sixty grains of the bromide of potassium, and ten drops of the tincture of aconite root in a wine-glassful of water; the same to be repeated in an hour or two, if the head be not relieved. (*American Practitioner*, March 1877.)

Physiological and Therapeutical Properties of Glycerine.—Dr. A. Catillon, from experiments made in Professor Vulpian's laboratory, finds glycerine when given in weak doses act favourably on the general nutrition of the body. Dr. Davain had already noticed that considerable increase in weight took place in patients for whom he had prescribed glycerine, and who had suffered from languor, anæmia, and rachitis. Glycerine diminishes the processes of tissue waste, and is an element for the respiratory combustion. As a consequence of this the fatty matters of the organism are saved as well as the azotised substances, as is shown by a diminution of the amount of urea secreted. It renders more active the phenomena of molecular nutrition, it favours assimilation by exciting the appetite and by exercising a regulating influence over the digestive functions. When taken in excess, it is eliminated in part by the kidneys, beginning to appear in the urine in man when the dose exceeds 300 grains. Glycerine is not found in the perspiration. Glycerine possesses a laxative property—a dose of about one ounce produces one and sometimes two evacuations; the proper dose to be given when it is employed to regulate the digestive functions is about an ounce, whilst double that amount may be given when it is to produce slight excitation of the kidneys. (*Archivio Clinico Italiano*, Feb. 1877.)

A New Remedy called Digestine.—This is obtained from the gizzard of the domestic fowl (chicken), and is useful for vomiting in pregnancy. Dr. Scully has used this remedy for twenty-five years, and it has never failed. It is also the most powerful and reliable remedy for the cure of dyspepsia and sick stomach caused by debility of that organ. It is useful in all cases where the pepsine and pancreatine are used, but with much more certainty of its good results, for it puts all those preparations in the background. In complicated affections of the stomach, such as inflammation, gastralgia, pyrosis, &c., it may be combined with subnitrate of bismuth and opiates; and in diarrhœa and cholera infantum, with astringents, both vegetable and mineral. Dr. Scully has given the article to several prominent physicians, who have used it with the happiest results, among whom he mentions Professor E. Wallace, of the Jefferson Medical College, who gives him the result of seventeen cases as follows:—In vomiting of pregnancy, out of nine cases he cured six and palliated two, and in one case the remedy was not taken according to direction, and therefore had no effect. He used it in seven cases of sick stomach caused by chronic inflammation of the uterus; cured five, and two remained doubtful. He also used it in a case of very obstinate sick stomach, caused by an irreducible hernia, and says this was the only remedy that gave any relief. The dose is from five to ten grains, hardly ever more than five, except in obstinate cases. For children from one to five grains. Dr. Scully's mode of administering it is in a spoonful of water or tea; it may be strewn on a piece of bread and covered over with butter; it is, however, nearly tasteless. In dyspepsia and in vomiting of pregnancy, he directs it to be taken half an hour or so before each meal. In other affections of the stomach and bowels, every two or four hours. He gives it uncombined, except in complicated cases, as heretofore mentioned. Messrs. Wm. R. Warner and Co. of Philadelphia, have prepared a form, designated digestine. It is both pure and active. (*Canada Lancet*, March 1, 1877; and in *Med. and Surg. Reporter, Philadelphia.*)

Deep Injections of Chloroform in the Treatment of Inveterate Sciatica.—This method of treatment, first practised by Collins and Bartholow, consists in an introduction of an hypodermic syringe-needle to as great a depth as possible into the buttock or thigh, and the injection of from thirty to fifty drops of pure chloroform. Collins (Schmidt's *Jahrbuch*, 1875) reported rapid and definite cures of inveterate sciatica, which had resisted the majority of the usual remedies. Among others, he reports the following cases:—Sciatica, obstinate pain in the internal plantar nerve, duration six weeks, cure after injection of thirty drops; sciatica, six weeks' duration, cure by the first injection. A third case, of three years' duration, disappeared completely after an injection of forty drops. Dr. Cerenville has repeatedly tried this treatment with the best results in old cases of sciatica, which had been treated with blisters, iodine, and all kinds of revulsives, even the actual cautery. The injections were made into the buttock, thigh, and ham; cures were obtained as rapid as those reported by Collins; in other cases, however, the pain returned. Cerenville noted two phenomena incidental to these chloroform-injections. In two instances complete anæsthesia of the leg was observed, which lasted two days, and its disappearance was as sudden as its onset. The puncture had been made into the middle posterior portion of the thigh, and the injection had probably penetrated the nerve-sheath or near it. There was also intense pain at the moment the liquid penetrated. In another case, an injection into the upper part of the ham was followed by a very painful swelling, which yielded to applications of mercurial ointment and emollient poultices. No general effects from the chloroform were observed, nor *malaise*. The average quantity injected each time was about fifty drops. (*Bull. de la Soc. Med. de la Suisse; Canada Lancet,* January 1877.)

Ænothera Biennis (Evening Primrose) as a Sedative.—Dr. N. S. Davis calls attention to the remedial value of the Ænothera biennis, or evening primrose. He regards it as a mild but efficient sedative to nervous sensibility, acting more especially on the pneumogastric nerve. Hence its adaptation to the treatment of such cases of respiratory or gastric trouble as involve a morbid sensitiveness either in the laryngeal, pulmonary, or gastric branches of that nerve, whether of an acute or chronic character. It is certainly worthy of further trial in the treatment of such affections as hooping-cough, spasmodic asthma, and certain sensitive conditions of the stomach interfering with healthy digestion. The plant may be used in the form of infusion or of fluid extract. The former may be given to adults in doses of one or two tablespoonfuls, the latter of from twenty to thirty minims, repeated every three, four, or six hours as the case may require. (*American Practitioner* and *Boston Med. and Surg. Journal,* March 15, 1877.)

Bromidrosis Pedum.—Dr. Longworth, of Cincinnati, gives the results of some experiments made by him to test the truth of the commonly accepted opinion that the bad odour in this affection is due to decomposition of the elements of perspiration. Horny epidermis was removed from different parts of the cadaver, including the soles of the feet, soaked in ether three or four hours, and washed thoroughly in water. It was then entirely odourless. Being placed in test-tubes with just enough water to cover it, and kept at a temperature of 90° F., the specimens from the various parts behaved differently. Those from the chest and abdomen preserved their transparency, and did not swell up for several days ; the fluid, however, became turbid and had a fœtid odour resembling that of bromidrosis. Those from the soles began to swell up in an hour or two, and after twenty-four hours gave out an odour absolutely identical with that under discussion. Dr. Longworth concludes therefore that the odour of the affection is due to the maceration and decomposition of the horny epidermis. (*Boston Med. and Surg. Journal,* December 7, 1876.)

Case of Tetanus Successfully Treated by Calabar Bean.—Dr. Grant, of New York, records the case of a young man who fell into a vat of boiling sugar, the liquid rising as high as his waist. He was quickly taken out and was at once taken to the hospital. He improved slowly from the date of the accident, 19th August, up to the 12th September, when the nurse reported that he had been very restless through the night, and sometimes excited. The next day he remained in a half-sleeping condition, with sudden fits of starting and occasional contractions of the platysma and facial muscles, with temporary fixation of the lower jaw. Later he complained of sudden pains shooting all through him. At night the muscles of the legs and abdomen underwent sudden and painful contractions. He was now seen by Dr. Pooley, who ordered him ten-drop doses of tincture of Calabar bean, repeated every hour, and to be gradually increased; also beef-tea, wine, and milk frequently. September 14th. He was delirious all night, but the spasms did not increase. He was now taking twenty-five drops of the tincture every hour. September 15th. The patient was much worn in appearance, though the spasms had not increased. The dose was increased to thirty drops every hour, and the following prescription ordered :—Chloral hydrat. potass. bromid. ā ā ℥j, aqua ℥iv. Sig. A dessertspoonful every three hours. He slept calmly nearly all the following day. For a week after this up to September 20th he continued to improve, taking thirty drops of the tincture thrice daily. On September 29th he had whilst in a bath a violent attack of opisthotonos lasting fifteen minutes. A strong alcoholic solution of Calabar bean, containing thirty-two grains in one ounce of alcohol, was immediately made, and forty-five drops given every two hours. On October 1st the above dose was only given three times in the day, but an attack of opisthotonos immediately occurred and lasted for two hours. Sixty drops were now given of the solution every hour, and continued for four days, and then gradually reduced. No physiological action was observed beyond contraction of the pupil and slight delirium. The tincture and extract were both good preparations. The maximum dose now was four grains. (*New York Medical Record,* December 1876.)

Salicylic Acid in Iritis.—Dr. Leonard Wheeler, in a paper read before the Worcester Society for Medical Improvement, states that his experience of his own case is worthy of record. He has suffered repeatedly from iritis in each eye; in all twelve times, eight full attacks and one abortive. In each full attack there was about a week, during which the pain, especially at night, was very severe. Till the last time he found it best controlled by one-quarter of a grain of morphia, given subcutaneously in the temple. In his last attack he took one evening, in the stage of invasion, a drachm of salicylic acid in ten-grain doses every hour. There was no change for the better or worse for some days after. Then after exposure he rapidly got worse; pain came on, and he took opium by the mouth and subcutaneously for two nights with only partial relief. On the third evening he tried salicylic acid as before, slept all night, and awoke with a clear head and a good appetite. He then took the acid every evening, gradually diminishing the dose to thirty, twenty, and ten grains, and had no more pain. The eye seemed to clear up more rapidly than usual. He took from ten to twenty grains every evening for three weeks, and after the interval of a fortnight, during which the eye became again threatening, for four weeks longer, sometimes with additional morning and noon doses, in case he felt any rheumatic pains. The insolubility of salicylic acid in water, he remarks, makes its administration in the liquid form difficult. Ten parts of the acid and eight of borax with one hundred of water make a clear solution of six grains to the drachm. (*Boston Medical and Surgical Journal,* February 22, 1877.)

Notes and Queries.

NOTES AND CORRESPONDENCE.

Portable Case of Urinary Tests.—An exceedingly neat, portable, and convenient case for carrying all the apparatus and tests usually required for testing urine, has been designed by Dr. Alexander, of Bradford, and constructed by Mr. Hawksley. It contains a test-tube, spirit-lamp, matches, litmus papers, nitric acid, Fehling's solution, urine glass, urinometer, and rack in which to place the tube and urine-glass. Notwithstanding its completeness, it only measures 6¼ inches in length, by a little over 2½ in breadth, and 1 inch in depth. The matches and test-papers are contained in small ebonite boxes, the Fehling's solution in a stoppered bottle, and the nitric acid in sealed tubes, one of which is broken each time of testing. The risk of damage to the clothes, which might occur by the accidental escape of nitric acid from a stoppered bottle, is thus avoided. The spirit-lamp is made with a brass cap, which screws tightly over the top of the lamp, so as to prevent the escape of spirit. The wick, which is thus pressed below the level of the wick-holder, is picked out each time by a pin contained in the cover of the case. The urinometer and urine-glass, being small, are useful not only for carrying about, but for employment in the consulting-room, where it sometimes happens that only a very small quantity of urine can be obtained, insufficient to float a urinometer of the usual size. The design of the case is most ingenious, and we think that it will serve its intended purpose very successfully.

Bibliography.

The Digestion and Assimilation of Fat in the Human Body. By H. Critchett Bartlett, Ph.D., F.C.S. Crown 8vo. pp. 46. 2*s.* London: Churchill.

The Disposal of Slop Water of Villages. Second Edition. By Cornelius B. Fox, M.D. Crown 8vo. pp. 43. 1*s.* 6*d.* London: Churchill.

Further Remarks on the Period of Infection in Epidemic Disease. By William Squire, M.D. 8vo. pp. 20. 1*s.* London: Churchill.

Fowne's Manual of Chemistry, Theoretical and Practical. Vol. I.—Physical and Inorganic Chemistry. Twelfth Edition. By Henry Watts, B.A., F.R.S. Crown 8vo. pp. 551. 8*s.* 6*d.* London: Churchill.

A Practical Treatise on Operative Dentistry. Third Edition. By J. Taft. Roy. 8vo. pp. 521. 18*s.* London: Churchill.

Headaches, their Nature, Causes, and Treatment. By William Henry Day, M.D. Crown 8vo. pp. 312. 6*s.* 6*d.* London: Churchill.

The Microscopist: a Manual of Microscopy and Compendium of the Microscopic Sciences, Micro-mineralogy, Micro-chemistry, Biology, Histology, and Pathological Histology. Third Edition. By J. H. Wythe, A.M., M.D. Roy. 8vo. pp. 259. 18*s.* London: Churchill.

Contributions to Reparative Surgery. By Gurdon Buck, M.D. Roy. 8vo. pp. viii. and 237. 9*s.* London: H. K. Lewis.

A Practical Treatise on Materia Medica and Therapeutics. By Roberts Bartholow, M.A., M.D. Roy. 8vo. pp. xi. and 537. 16*s.* London: H. K. Lewis.

A Practical Treatise on the Diseases of Children. By J. F. Meigs, M.D., and W. Pepper, M.D. Royal 8vo. pp. xv. and 1,012. 28*s.* London: H. K. Lewis.

Department of Public Health.

CITIZENSHIP IN SANITARY WORK: A HOME EXAMPLE.

TOTTENHAM (within the "outer ring" of the metropolis) has been more than once mentioned in these pages as an example of the advantage that may be derived from the existence of a "Sanitary Association" charged with the duty of interesting the whole population in the lines of action that are required for health and of seeing that the local sanitary authority does its work properly. The following facts are abstracted from a recent report of this Association; and they appear to us to deserve the earnest attention of all who are concerned to gain sanitary progress, but particularly of that section of the community that is too apt to clamour for central interference when they ought to be helping themselves. The Tottenham Sanitary Association begins by referring to a special report, made by it two years ago, upon the health of Tottenham during the thirty-six years which had elapsed since the establishment of the Registrar-General's department, when the following facts were set forth.

Tottenham was, at the time of the earliest of the Registrar-General's records, a decidedly healthy place, and continued so for many years, although, in common with the country generally, fever was more prevalent than it now is in an otherwise healthy locality.

With the growth of population, however, the healthiness of Tottenham began to diminish, until the vigorous measures adopted by the Local Board of Health, created about the year 1850—viz., the establishment of an excellent system of drainage and water supply—not only put an end to the deterioration in the public health, but made Tottenham more healthy than it had ever been before. These measures had a most marked effect in diminishing the number of cases of fever in the district.

This satisfactory state of things lasted about ten years, during which not only the death-rate from all causes, but the death-rate from the "filth" diseases continued to be low. The population of Tottenham then began to increase very rapidly, but the Board (owing very much to the supineness of the leading inhabitants) failed to make correspondingly increased provision of sewers and water, and became remiss in enforcing its own bye-laws against nuisances. The result was that the health of the parish deteriorated rapidly.

By the year 1870 the death-rate had risen to the extent of more than a fifth over its former amount, and the death-rate from the seven principal zymotic diseases had nearly doubled.

Some of the inhabitants then began to take alarm, and eventually, by aid of the Government, the local board was forced to begin the work of constructing additional sewers; but it was not until a serious outbreak of typhoid fever in the early part of 1873 that public feeling was strongly roused. The principal inhabitants, acting in concert, then resolved to see that the needful measures of sanitary reform were carried out without delay.

Even before this time more efficient men, who had been placed on the board, were doing good work, and each election increased the number. By the end of 1873 many sanitary reforms of vital importance were carried out more or less completely.

Pollution of the water-supply, arising from the supplementing of the supply from the deep well by land spring water, drawn partly from highly-manured market garden land, was brought to an end. Sewers, the original means of ventilating which had been gradually done away with, were again ventilated, and new sewers were constructed. Ditches and watercourses were cleansed; nuisances of all kinds were abated.

The effect of these improvements was strikingly manifested by a marked amendment in the public health during 1874, an amendment which has continued down to the present time.

Coming to periods subsequent to its report above quoted, the Sanitary Association states that the reforms, commenced so vigorously in 1873, have been pursued with no less vigour ever since. The system of sewer ventilation has been completed; many new sewers have been made; the water-supply has been increased, and the area of distribution widely extended. Nuisances of all kinds have been energetically dealt with, and the condition of dairies and slaughter-houses has been watched by the proper officers; in short, the Board, instead of, as in years past, being often the great obstacle to improvement, has taken the lead in measures of reform.

Probably no other Board in the country has taken the trouble to make a house-to-house distribution of handbills, setting forth the need of house-drain ventilation; and but few Boards insist upon the proper ventilation of the drains of every new house.

In the report already quoted from, a comparison was made between the death-rates during 1873-1874 of Tottenham and twelve other suburbs, with the average of which it was thought Tottenham might, in respect of situation, &c., fairly be compared. The comparison showed that whilst during 1873 the death-rate in Tottenham was 25 per cent. higher than in the average of these suburbs, in 1874 it was only 6 per cent. higher. Now, as shown below, the inequality is in Tottenham's favour.

The comparison has been kept up each year since, and has now been carried back as far as the year 1871, so that it now extends over a period of six years. During the first three of these years (1871-2-3) Tottenham was suffering from the effects of long-continued sanitary neglect. During the last three (1874-5-6) Tottenham was reaping the benefits of important and wide-spreading sanitary improvements.

The six years' statistics which are appended will be as satisfactory to the inhabitants of Tottenham as they are remarkable.

The statistics show that whilst during the years 1871-2-3 the average yearly death-rate in Tottenham (19·3 per 1000) was 2·1 per thousand *above* that of the twelve suburbs, during the three years 1874-5-6 the average yearly death-rate of Tottenham (17·2 per 1000) was ·2 per 1000 *below* that of the twelve suburbs.

They show also that whilst during the years 1871-2-3 the average yearly death-rate in Tottenham from the seven principal zymotic diseases (4·7 per 1,000) was 1·8 per thousand *above* that of the twelve suburbs, during the three years 1874-5-6 the death-rate (2·3 per 1,000) was ·3 *below* that of the twelve suburbs.

The number of deaths under one year of age for every 1,000 births during 1871-2-3 was 157 in Tottenham as compared with 133 in the twelve suburbs, whilst during the years 1874-5-6 it was only 127 as compared with 134 in the other suburbs.

The health of these suburbs has not fallen off, for the death-rate is no higher than it was; but the health of Tottenham, instead of being much worse than that of the other suburbs, is now somewhat better.

Looking to the case of Tottenham alone, it is seen that in spite of rapid growth of population, the total number of deaths from fever during the three years 1874-5-6 was only 23 as compared with 99 during the years 1871-2-3; the deaths from diarrhœa were only 52, as compared with 86; and the deaths from the seven principal zymotic diseases only 200, as compared with 343. They show that in spite of rapid growth of population, as evidenced by the fact that the total number of births during 1874-5-6 was 445 more than during 1871-2-3, the total number of deaths was only 79 more. Indeed the total number of infants who died during 1874-5-6 was actually *less* by 17 than during 1871-2-3, and out of the total increase in the number of deaths (79), 63 were of persons over 60 years of age.

One of the chief sanitary reforms effected in Tottenham during the past four years—a reform to which the foregoing results must be held to be largely due—was an improvement of the water supply of the Local Board of Health, a portion of which four years ago was condemned on analysis as highly injurious to health, but which now stands the very first in point of purity of the waters supplied by the Metropolitan companies.

Apparently as the result of its action in sanitary improvements Tottenham has the gratification of finding that 400 out of 600 houses that stood empty in 1871 have now found tenants. It may be suggested, indeed, that this has been due in part to an improved railway service, but on the other hand the present general commercial depression as compared with the prosperity of 1871 has to be taken into account; and on the whole it is fair to believe that prosperity as measured by money has been a direct result of the sanitary progress of the place.

With continuous vigorous action on the part of the authorities and the association, further improvement in the health of Tottenham may be expected. Particularly the Sanitary Association would do wisely to press strongly on the Board the necessity of providing efficient means for the isolation of early cases of infectious sickness. Without such provision it may easily happen that scarlatina or like disease will some day attain epidemic proportions, and, by raising the general death-rate and the zymotic death-rate, will throw apparent discredit on the much good work that has been done in Tottenham.

HYGEIA MILITANT.

> "Ez fer the war, I go agin it,—
>   I mean to say I kind o'du,—
> Thet is, I mean that, bein' in it,
>   The best way (is) to fight it thru;
> Not but wut abstract war is horrid,
>   I sign to that with all my heart,—
> But civilisation *doos* git forrid
>   Sometimes upon a powder-cart."
>
> —*The Biglow Papers.*

If the candidate for the Presidency in the immortal *Biglow Papers* should ever again appeal to his fellow citizens, it may be anticipated that his qualification of the horrors of war by a reservation as to their civilising influence, will receive a development little dreamt of when Pastor Homer Wilbur edited his "notions." Is it too much to say that since that time war has given occasion to the most remarkable manifestations of Christian charity in modern times?—that the influence of these manifestations has not been limited to the period of war, but has exercised a powerful and persistent effect on the nations engaged in strife?—and that such effect has been especially manifested in the impetus given to the closer and more earnest study of the hygienic conditions of civil as well as of military life, to profounder convictions of the necessity for amending such as are unwholesome, and to more sustained efforts for obtaining necessary amendments. War, the negation of Christian practice, has proved in these later days the rock, so to speak, from which some of its brightest coruscations have been struck.

No sufficient account has even to the present been given of the mode and extent to which sanitary work generally was influenced by the tremendous disaster which befell the British army in the Crimea during the winter of 1854-55. Its effects upon military hygiene are better known, and the example then set of the public supplementing of its own will the action of the responsible Departments of the State in all things that concerned the sanitary welfare of the army in the field, has been followed more or less by every Christian nation which has engaged in war since that date. Organisations, moreover, for this purpose (for example, the "Red-Cross" Associations) have become permanent in almost every country of Europe.

The most illustrious application of those principles of domestic intervention in the events of a campaign, which converted our disaster in the Crimea into one of the most beneficent events in the annals of Great Britain, and indeed of the Christian world, is that of the late war in the United States. Of all the facts of that great but deplorable struggle none throw so brilliant a halo over it as the universal movement of the non-combatant population of the States to assuage the sufferings of the armies in the field. The very vastness of the efforts made in this direction has rendered it difficult to grasp them, and the results corresponded with the grandeur of their scope.

In the present war Russia seems determined to emulate and even to surpass the United States in its voluntary efforts to alleviate the sufferings of its soldiers from sickness and from wounds. In the late war in the United States the voluntary measures in aid of the sick and wounded had to be organised after the war had opened. Russia, taking time by the forelock, has for some time been steadily organising voluntary associations for the purpose; and the Servian war proved how largely the Russian people were prepared to give systematic help to their armies. Hardly had the declaration of war between Russia and Turkey been made, before the Russian Red Cross societies were prepared to take the field with many ambulances, and there is hardly a town of note in the empire which is not now engaged in organising one or more ambulances, while money and gifts in kind calculated for the comfort and sanitary welfare of the soldiers are being literally poured into the depots of the different associations, so great is their profusion.

Noteworthy among the various measures which have been adopted to inform and guide aright the enthusiasm which has been aroused among the Russian people for the medico-sanitary welfare of their armies at the seats of war in Europe and in Asia is an address given in St. Petersburg by Dr. Metzler, the principal physician of the hospital of St. Peter and St. Paul there. This gentleman was attached to the hospitals of Sympheropol and Bakhtchiserai during the Crimean war, and on the declaration of peace he had an opportunity of studying the hygiene of the allied forces and learning on the spot their sanitary experiences. In conjunction with the late Dr. Rosenberger, moreover, he was engaged in directing the vast works of purification which were needed, after the allies had evacuated the Crimea, in the localities which had been occupied by the contending forces. In the address referred to Dr. Metzler first showed from the results of the Crimean and some more recent wars that steel and lead were as a rule less fatal to troops in the field than the diseases incidental to campaigning; and he then proceeded to discuss the practical application of this truth to the mobilised Russian armies. Here are the bare facts of his argument:—

During the Crimean war, in the short space of a year and a half, 341,000 men concerned in it were buried within the government of Taurida, of whom 170,000 were Russian, 156,000 allies (English, French, Sardinians, and Turks), and 15,000 Tartar fugitives. Of these 341,000 men, 324,800 were buried within the limits of the peninsula of the Crimea, 210,000 of them in the town of Sebastopol and its immediate vicinity. Of this vast accumulation of the dead 30,000 had been killed on the field of battle, and 30,000 more had died from the effects of wounds, 60,000 (17·5 per cent.) in the whole from injury by instruments of warfare, while not less than 281,000 had succumbed to epidemic maladies. Moreover the Russians and French had each invalided about 100,000 men, the former sending them into the interior, the latter to Constantinople, the majority suffering from typhus. Of these 200,000 sick probably not less than 60,000 died. Add the deaths among the English and French forces in Bulgaria, and especially in the French expedition in the Dobrudscha; the deaths in the English hospitals on the Bosphorus, the Dardanelles, and elsewhere; the deaths among the Russian and Turkish forces in Asia Minor, and the deaths among the Russian populations infected with typhus imported by the troops; and the total loss of life occasioned by the Crimean war and happening within a period of three years, could not have been less, Dr. Metzler estimates, than half a million! History, he adds, does not record a war so fatal to human life as this one was.

Taking now the war of 1866, the Prussian army lost then 10,877 men, of whom 40·1 per cent. were killed on the field of battle or died from wounds, and 59·5 per cent. died from infectious diseases. Now this war was conducted under peculiarly advantageous circumstances in a medico-sanitary aspect. It lasted only two months during the most favourable season of the year, the action was concentrated in several great battles and there were no sieges, the theatre of war was close to Prussia, and the troops were transported to the Austrian frontier by railway, and thus escaped exhausting marches before entering upon active warfare. On the other hand, the summer was characterised by great alternations of temperature, days of great heat being followed by cool, damp nights; the men had to bivouac largely in the open, and often in the vicinity of or upon the field of battle, amidst the decomposing remains of men and animals. The water used for drinking was often impure, and large quantities of unripe fruit were consumed. Moreover, in addition to the more ordinary fatal camp diseases, epidemic cholera, then present in Europe, broke out among the troops.

Another illustration of the deadliness of disease in warfare is derived from the war of 1870. In that war the German army lost 40,854 men, 28,280 (69·22 per cent.) killed on the field of battle, or who succumbed afterwards from wounds, and 11,381 (27·85 per cent.) from sickness, principally typhus and dysentery. Here the relative proportion of deaths from disease and from injury, as observed in the wars previously noted, is altered. But Dr. Metzler remarks that the mortality from sickness is nevertheless very considerable in view of the fact that the battles fought in this war were the most bloody known.[1] If, however, regard be given to one episode of the war, the siege of Metz, where the conditions of warfare more nearly approached those observed in the Crimean war, the mortality from disease among the investing forces reached 68·0 per cent. of the mortality from all causes.

Now while the mortality occasioned among an army in the field by instruments of destruction is an inevitable consequence of warfare, that occasioned by disease may be almost certainly controlled. If the Crimean war be memorable from the sanitary disasters which befell the contending forces, it is even more memorable from the conclusive proof which was given by the English army before the close of the war that these disasters, and the tremendous waste of life they involved, were wholly unnecessary. How this was proved Dr. Metzler clearly and succinctly described, clenching his lesson with the following words:—

"It seems to me then that the example given to us by the English during the Crimean war should be followed in every point. It is desirable that a sanitary corps should be formed, having an independent constitution and administration and possessed of independent resources and large powers. This corps should follow in the track of the army and have the function of taking on its own initiative the sanitary measures requisite for the welfare of the army and of the civil populations. This sanitary corps would fulfil a threefold mission: (1) It would charge itself with the treatment of wounded and sick in hospitals maintained at its own cost (this is the work now actually done by the Red Cross Societies). (2) It would watch over the well-being of the soldiers, furnishing them with tea, drinks, woollen clothing, tobacco, &c.; in brief, articles which, if not strictly indispensable, would not the less contribute to the comfort of the soldier during the hardships of a campaign. (3) It would organise a regular sanitary service in the theatre of the war."

---

[1] There were not less than 111 great battles fought in the Franco-German war, and upwards of 1,488 lesser engagements and skirmishes.

Thus Russia seizes upon and turns to good purpose and participates equally with its former foe in the one abiding benefit which came from the Crimean war. But not so with our ally in that war, the Turk. Such civilising influence as war may have incidentally exercised by giving occasion for the development in these later years to a higher humanity would seem to have been limited to Christian races. An army of our dead lies in closely serried ranks on the low cliff at Scutari, across the Bosphorus, opposite Stamboul. But it lies there as unheeded and as meaningless to the Turk as the solemn, impassive faces of Marochetti's colossal granitic angels which tower above the graves.

ON DISEASES AND HYGIENE OF WORKMEN IN THE MANUFACTURE OF ARTIFICIAL FUEL FROM PIT-COAL AGGLOMERATED WITH DRY PITCH.

BY DR. A. MANOUVRIEZ,

Laureate of the Academy of Medicine of Paris.

TRANSLATED UNDER THE DIRECTION OF THE AUTHOR, BY F. J. BROWNFIELD BATEMAN.

(*Continued from p.* 400.)

EYES.—The dry pitch dust hurts the eyes of the cellarmen, and occasions prickings, lachrymation (Case I.), and photophobia (Cases II., VI., VII.), different ophthalmias: conjunctivitis (Cases II., and V.), pterygium (Case VIII.), keratitis and iritis (Case II.), and transitory or permanent amblyopia (Cases I. III., VI., VII.), which often progressively diminishes after ceasing to work. In certain cases, the conjunctivæ may become of a yellow colour, as in the subject of Observation I., and in a loader whom we have lately seen.

Finally, now and then, besides amblyopia, we have noticed hemeralopia with photophobia, reduction in the range of accommodation, and sensation of a veil before the eyes. In the following case, the ophthalmoscopical examination was made.

Case VI.—Pitch-workmen during ten years.—Cancroids of the nose and scrotum cured by crucial incision and ammoniacal cauterisation. Amblyopia with reduction in the range of accommodation, hemeralopia and photophobia—ophthalmoscopical examination.

On the 7th of July, 1875, we examined a former agglomerated coal-maker, forty-four years old, who had left for five months and a half the manufactory of Saint Vaast, where he had worked for ten years, two of which in the cellar, seven at the distillation of coal-tar, and the last five months at the basins of pitch.

He soon became melanodermic. During his work at the distillation of coal-tar his skin had a special bright yellow colour. Whilst in the cellar, he had on his face and neck some pimples, which left some white scars on the left cheek, and on the right side of the neck. He noticed that pure camphorated alcohol had succeeded the best in making them disappear.

After a year's work in the cellar, he was also affected with cancroids on the nose and scrotum. On the nose the cancroid settled in the middle of the dorsal surface, accompanied with ganglionic obstruction. Upon the scrotum, the one was found on the right side, the other on the left; these tumours were bulky and projecting. Later on, only a year ago, he happened to get rid of these epitheliomas by cutting them crucially with a paring knife, and cauterising them with liquid ammonia. This kind of treatment lasted five months, during which the patient worked at the basins. At the present time, we find on the back of the nose a large grey scar, elliptic, as big as a shilling, and on the scrotum two small scars, the one on the right side, the other below on the left, similar to that which the subject of Observation II. had retained after his operation.

This workman has also had warty excrescences on the shoulders, on the parts which are rubbed by the braces, and he still retains on the middle of the left cheek and in its substance a hard tubercle of the size of a very large pea, adhering to the skin and hidden by a small projecting pimple surmounted by a scaly scab. He has also an ulcerated tubercle in the right nostril.

The patient is in the habit of taking alkaline baths and of using alkaline lotions, to eliminate the pitch from the skin.

Black expectoration whilst working in the cellar and at the basins. Epigastric pains at the time of taking a meal from the ingestion of hot food. Habitual costiveness; excrements hard and black, now and then bloody. Urine yellowish green, sometimes very thick.

Palpitations of the heart whilst working at the distillation of coal-tar, and in the pitch basins, reappearing from time to time since his leaving the manufactory, although we hear no cardiac or vascular bruits.

For some time his sight has been growing weak, especially on the right side, and this amblyopia has continued to increase, since he no longer works at the pitch. The patient can only read at a great distance, that is to say that the nearest point of distinct sight is removed from the eye (reduction in the range of accommodation); he experiences the sensation of a veil interposed between his eyes and external objects. From the time that the twilight sets in, this workman sees less distinctly; in the evening he can recognise nobody (hemeralopia).

Moreover, the bright light of the sun makes a painful impression upon him, dazzling him and preventing him from plainly distinguishing objects. The photophobia is so great that the patient had taken care to paint the inside of his house with a dark colour, as he would have been wearied by the white reflection of whitewashed walls.

At the ophthalmoscopical examination, the choroid appears to be grey ; the optic disc is greyish-white, with peripapillary pigmentation in the form of deep brown dots. The vessels are pale and diminished in size.

The following observation and another case, which we do not relate here, prove that the diseases of sight gradually diminish in the years which follow the cessation of working at pitch.

Case VII.—Loader and cellarman for ten years.—Amblyopia, hemeralopia, and photophobia.

Had been a loader and cellarman for ten years, is seventy years old, and has left the artificial fuel manufactory for more than two years.

Whilst he worked he had itchings and prickings of the shin and pustules ; abundant coryza, numerous attacks of bronchitis, with black expectoration, which lasted a year after his leaving the manufactory. Has asthma at the present time. (July 1875.)

During his work, prickings in the eyes, especially from heat and from exposure to the sun ; weakening of the sight with hemeralopia ; painful dazzling from a too strong light ; he once lost his way in broad sunshine (photophobia). Since that time, his sight has been growing better from day to day.

Let us remark that hemeralopia preventing the patient from recognising people in the evening, singularly contrasts with the photophobia occasioned either by the direct rays of the sun making one lose one's way, or by the diffused light reflected on the whitewashed walls.

Moreover in the following case we have observed a brown grizzly opacity of the crystalline lens.

Case VIII.—Cellarman far nine years.—Pterygium, and opacity of crystalline lens.

May 1876.—A man, fifty years old, working in the cellars for nine months. He wears spectacles for protection, but the pitch dust penetrates nevertheless as far as the eyes.

It is four months since he began to suffer in the left eye a painful sensation of a foreign body, due to a commencing internal pterygium, now plainly visible with the lens.

For two months the sight has become dim on the left side. On ophthalmoscopical examination, the fundus of the eye seems sound, but we find at the infero-internal part of the crystalline lens, some opacities in the shape of granulations irregularly formed into groups ; oblique illumination allows us to appreciate their brown grizzly colour, and to notice that they have their seat in the most superficial layers of the auteride surface of the lens.

This workman is not subject to any cutaneous eruption, which he attributes to his daily washings with a solution of carbonate of potash.[1]

Ears.—The dry pitch-dust which fills the atmosphere of the cellars can occasion in the external auditory tube incrustations under the appearance of black stains (Case V.), sometimes even external otitis, with abundant and fœtid suppuration, as in the following case :—

Case IX.—Cellarman for three months.—External suppurated otitis on the right side.

April 1875.—Cellarman, thirty-two years old, working only for the last three months in the cellar, where are carried on the unloading and grinding of dry pitch.

Melanodermy and other different cutaneous manifestations, pustules, and ulcerated tubercles, particularly on the face and scalp.

External otitis on the right side, with abundant and fetid suppuration.

The eyes are intact, thanks to the protection of spectacles that this workman has always used with care during his work.

These various symptoms began a month after his coming to the manufactory.

Respiratory Organs.—The penetration of dry pitch-dust into the respiratory organs occasions coryza, and ulcerated tubercles in the nasal fossæ; it gives rise, on the cellarmen in good health, to an habitual cough, with black expectoration. Now and then these workmen fall ill, and show the following symptoms: fatiguing cough, with black expectoration, which may last a year (Case VII.), and even nineteen months (Case I.), after leaving off work; abundant rhonchi, intense dyspnœa, and ill-defined pains at the base of the chest, on a level with the last ribs, great weakness and wasting.

Generally, after a certain rest, and under the influence of a suitable treatment, these patients are cured; but they are subject to relapse and to consecutive pulmonary emphysema (Case VII.), Many die from a kind of phthisis, of which Observation I. gives a just idea.

This false melanosis, which may be compared to the pulmonary anthracosis of copper-moulders working in an atmosphere loaded with charcoal dust, and to that of pit colliers, could be named pulmonary brutioses (from *brutia*, pitch.)

---

[1] Diseases of the eyes and weakness of the sight have been observed in the machinists and firemen of locomotives consuming agglomerated coal.

In certain cases, black expectoration is found on cellarmen admitted into the Hotel Dieu for another disease. (Case XI.)

The loaders, who have only a little black expectoration, and that only temporarily during their work, are nevertheless subject to repeated attacks of bronchitis, which, after a certain time, cause pulmonary emphysema.

Case X.—Loader for nine years.—Generalised bronchitis and pulmonary emphysema.—Hypertrophy and morbid sensibility of the liver.—Prurigo formicans.

A loader, sixty-seven years old, working for nine years, enters on the 1st of April, 1875, the Hotel Dieu at Valenciennes, under the care of Dr. J. B. Manouvriez, for a generalised bronchitis, which yields after a month's treatment. The liver is slightly hypertrophied and painful to pressure.

His skin, on its uncovered parts, is bronzed as on the other workmen of the manufactory; nevertheless, after his prolonged stay at the Hotel Dieu, the bronzing has become a little less marked. The sphygmographical tracing shows no other characters than those of a senile pulse.

Towards the end of May occurs a prurigo formicans extremely severe. In the latter days of June, after a treatment by alkalines internally and externally, and by cod-liver oil, his state of health becomes as satisfactory as possible, but he still has pulmonary emphysema.

DIGESTIVE ORGANS.—The presence of pitch in the digestive organs reveals itself by epigastric pains at the time of taking a meal, after the ingestion of hot food; by alvine secretions of abnormal colours, now and then blackish; by gastro-intestinal and hepatic disorders; costiveness (Case VI.), or diarrhœa with colics; gastro-duodenal derangement with bilious vomitings, and black and sometimes bloody stools; fever, weariness and pains in the limbs, hypertrophy and morbid sensibility of the liver (Cases I., X., and following case).

Case XI.—Cellarman for five years.—Gastro-duodenal derangement, and hypertrophy of the liver.—Black expectoration.—Cancroid of the scrotum.

A cellarman, sixty years old, working for five years, is admitted on the 3rd of August, 1874, into the Hotel Dieu of Valenciennes, for a gastro-duodenal derangement of four days' date.

The tongue is large and white; loss of appetite and severe thirst. Epigastric pain, sundry bilious vomitings. The liver is the seat of pain, which is increased by the weight of the bed-clothes and by pressure; this organ is hypertrophied and extends below the ribs to the extent of four finger breadths. There is no diarrhœa.

These gastro-hepatic symptoms are accompanied by high fever, perspirations and violent pulsative cephalalgia, general weakness, and pains in the limbs. Occasional cough followed by blackish expectoration.

The following day an ounce of castor oil produces five or six stools, at first blackish, then brown, yellow, and deep green According to the patient's account, his excrements are habitually black, like those of his fellow workmen.

The urine has a meadow-green colour (*couleur vert pré*), and under the microscope exhibits yellow, brown, and black particles.

The 1st of October, the epigastric pain and the lassitude abate ; but the pulse retains its frequency, and the appetite has not yet returned. Alkaline bath.

It is only on the 2nd, after a month's stay at the hospital, that he shows a sensible improvement. The pulse becomes less frequent, the cephalalgia and weakness diminish, and the tongue cleans.

The 3rd, the patient begins to be convalescent and gets up. The liver has still a prominence of three finger-breadths above the costal edge. The urine has preserved its meadow-green colour.

This workman is moreover affected with melanodermy, especially in the uncovered parts. His hair, naturally brown, has become red since he has been working at pitch. His face is covered with pustules and pitted with indelible consecutive scars. Four warts on the face and neck. Cancroid on the right scrotum.

This last case shows that loaders, as well as cellarmen, can be attacked with painful hypertrophy of the liver.

Urine.—The urine is generally of an abnormal colour, especially of a green-yellow or meadow-green colour (Cases VI., XI.), sometimes very thick (Case VI.). The microscope has revealed, in one case (XI.), the presence of yellow, brown, and black particles. Can we not observe in these changes in the urine the sign of elimination by the urinary organs of pitch altered and decomposed during its passage through the system ?

MORBID PREDISPOSITION AND RESISTANCE.

The want of reactional energy which, as we have already remarked, renders the agglomerated coal-makers capable of supporting well injuries and surgical operations, is also the reason why they, like the colliers and gas-makers, are singularly predisposed to contract cholera, which assumes in them a serious torpid form altogether unusual.

Case XII.—Loader for nine years.—Algide cholera of a serious torpid form.—Absence of reaction for a week.—Cure after two months and a half.

On the 26th of September, 1874, a patient is brought to the Hotel Dieu at Valenciennes, under the care of Dr. J. B. Manouvriez. He is an agglomerated coal-loader, 67 years old, attacked with algide cholera three days before ; diarrhœa and vomiting with rice-shaped grains and suppression of urine ; coldness and cyanosis of the skin ; torpor and cramps. The eyes are sunken, the voice is very weak, pulse perceptible, but filiform and frequent.

Alcoholised tea, vinous lemonade, hot water bottles round the body.

The vomiting ceases, the alvine discharges do not occur more than twice a day, but reaction does not set in, the anuria disappears the evening of his admission. The other symptoms of algidity, coldness, ulceration of the face and aphonia, last for a week ; on the 29th there is supra-hepatic pain, but the diarrhœa is arrested, and the appetite revives a little ; broth and progressive substantial nourishment. Emaciation and extreme weakness.

The cure was not complete for two months and a half. This workman had been a loader for nearly nine years.

There was at this time no epidemic of cholera ; only some autumnal sporadic cases were observed. Amongst six cases that we have met with, one occurred in an agglomerated coal-maker, and two in gas-makers.

The number of cases that we have given an account of may seem insufficient, but we would remark that the opinions expressed in this work are confirmed by our other researches on this subject.

ETIOLOGY.—We have seen that the special diseases of workmen employed in the manufacture of agglomerated coal result from a general impregnation of the body by pitch, with which the coal dust is agglomerated into lumps, and that the absorption of pitch in dust (cellarmen) or in vapour (loaders and workmen of the basins) is effected by the different cutaneous, digestive, and respiratory organs.

What is the chemical composition of pitch ? Dry pitch, or the solid residue of the distillation of coal tar, is composed chiefly of resinoid substances, as yet little known, probably produced by oxidation of hydrocarbons, pyrogeneous resins, with which is mingled a certain amount of heavy hydrocarburetted oils ; naphthaline, quinoleine, lepidine, paranaphthaline, and especially those which, like anthracene, chrysene, pyrene, &c., only distil at a temperature above 572° Fahrenheit ; perhaps even it contains some traces of essential oils and of volatile products, especially the most fixed, such as analine and phenic acid.[1] It is remarkable that, amongst these products, those whose physiological qualities have been studied act in a similar manner as pitch upon the organism. Let us mention the melanodermy caused by the absorption of aniline, and the yellow colour of the skin of the patients to whom picrates have been prescribed internally; the cutaneous accidents owing to the local action of phenic acid; the vomiting and the gastro-intestinal disturbance of workmen in the aniline manufactories (Morell Mackenzie,[1] Michel Levy;)[2] and the vomitings and diarrhœa observed by Turnbull,[3] Ollivier and Bergeron,[4] in animals after ingestion of aniline and of its salts.

---

[1] Dr. Lespian has said (*loc. cit.*) that creosote is one of the principal poisons which is formed when coal-tar is submitted to a high temperature in the employment of agglomerated coal as fuel. Now creosote does not exist in coal-tar

Lastly, aniline and coralline gently absorbed accumulate in the liver of animals (Tardieu and Roussin, Ollivier and Bergeron), as pitch does in the workmen in agglomerated coal; and aniline is eliminated partly by the urine, as was proved by Ollivier's and Bergeron's experimental researches.

It is impossible for the present, and besides of little use in practice, to state precisely what are the products of the distillation of coal-tar entering into the composition of pitch, which impart to it its injurious qualities. It is extremely probable that nearly all have a certain share in the production of the special diseases that we have described.

TREATMENT.—In the treatment of melanodermy, of eruptions and of digestive and respiratory diseases, we recommend alkalines internally (Case X.), and in baths and lotions (Cases VI., X.), and alcoholics in lotions (Case VI.), as solvents of pitch without reference to the treatment which each symptom may require.

Epithelial cancer and affections of the eyes and ears need no other treatment than that of these affections in general. Nevertheless, we prefer, for the removal of cancroid of the scrotum, linear crushing (Case XI.), and for that of the face excision,

---

We are aware that, under its name, is sold in trade a substance that is often phenic acid more or less impure; but true creosote is obtained from vegetable tar. It is not the first time that vegetable tar with wholesome qualities has been confounded with mineral tar, so injurious to health.

[1] Morell Mackenzie, *Medical Times and Gazette*, 1862, vii. p. 469.

[2] Michel Levy, *Traité d'Hygiène*, t. ii. p. 905.

[3] Turnbull, *Lancet*, 1861, v. 11.

[4] A. Ollivier et G. Bergeron, *Journal de Physiologie*, de Brown-Séquard, Juillet 1863, t. vi.

combined with cauterisation by the *pâte de canquoin.* (Case IV.) Excision alone appears insufficient, especially on the face, to prevent relapses; the operation only hastens the progress of the disease.

HYGIENE AND PROPHYLAXY.

Labour.—As the diseases special to the workmen of agglomerated coal result from a general impregnation caused by the emanations and above all by the dust from pitch, their prophylaxy would consist in diminishing as much as possible the contact of workmen with this substance, either by withdrawing them from the influence of pitch by the more complete substitution of machinery, or by the shorter hours of labour, by preserving them by clothes or engine protectors, or by diminishing the production of pitch in the cellars where the grinding is effected.

The hard labour has already been diminished by the introduction of the compressing machine for the moulding of the lumps. The cellarmen only do eight hours of effective work, and that at intervals, for in their day of twelve hours each of them rests half an hour after every hour of work.

With the exception of the protective spectacles, and the plugs of wadding in the ears, which may be useful, we may ignore the other contrivances for protection, because they are not practical.

There remains then, and it is the most important point, the question of diminishing the dust, and of increasing the volume of air. We have already said that the chief part of the dust arises from unloading the pitch by the air-holes. The workmen, in order to allay the dust a little, throw from time to time on the pitch a porringer of water; but this end is only imperfectly attained, because the quantity of water thus used is necessarily limited, from the fear of rendering the pitch too moist, and of thus hurting the manufacture of the lumps. A jet of pulverised water properly directed, according to circumstances, could be more advantageously used for allaying the dust without the employment of a considerable quantity of water. The means for improving the method of unloading in these cellars ought also to engage the attention of engineers.

Moreover, spacious cellars, well ventilated by numerous air-holes, and consequently of a moderate temperature, would be calculated to lessen the inconveniences of grinding and unloading.

In conclusion we recommend an outhouse or covered gallery to be erected for protecting against the inclemence of the weather the loaders who carry the lumps from the compressing machine into the waggons. Thus placed under shelter, these workmen will be less liable to be affected with rheumatic and pulmonary diseases, and they will perform a much greater amount of real work.

WORKMEN.—As for the workmen, extreme cleanliness of the skin will be the best preservative from eruptions and cancroid, as well as from digestive diseases. Their linen should be changed as often as possible. The workmen ought to wash their faces and hands before their meals; and after their day's work, should carefully wash the whole body with soap or alkaline carbonates, after the manner of coal-miners. We even think that it would be desirable to furnish them with a washing and dressing room, as the company does for its miners.[1]

---

[1] After having examined our report, the general director of the mines of Auzin, M. de Marsilly, has given the order to study the means of ameliorating the hygienic conditions of workmen at the manufactory of agglomerated coal, and especially to ventilate the pitch-cellars. In the smallest cellar an air window of four square metres has already been constructed above the grinder.

INDEX.

INDEX TO VOL. XVIII.

A.

Abdominal pregnancy treated by gastrotomy (Dr. Thomas), 190
Acetate of lead in treatment of granular lids, 196
Acetic acid and acetates in treatment of cancer of the breast (M. Eugène Curie), 379
Actual cautery, *see* Cautery
Acute mania, *see* Mania
Acute rheumatism treated with salicylic acid, 285
Aërated waters (Hay's), 202
After-pains prevented by ergot, 187
Ague, a cure for, 366
Albuminuria, arsenic in, 427
Alcohol as food (Messrs. Wanklyn and Cooper), 47
Alcoholism in relation to uterine diseases (Dr. Doyle), 445
Alexander (Dr.), portable cases of urinary tests, 460
Amaurosis, nitrate of silver in, 301
American cholera epidemic, 135
Ametropia and ciliary blepharitis, their relation, 295
Anæmia (progressive pernicious) treated by immediate transfusion (Dr. T. R. Glynn), 369
Anæmia, nature and treatment of pernicious (Professor Quincke and Dr. Bradbury), 128
Aneurism, a new method for treating external (Dr. Walter Reid), 294
Aneurism cured by complete temporary pressure (Mr. Thomas Wright), 192
Aneurism (external), new method of treating (Dr. Walter Reid, R.N.), 134
Aneurisms of the aorta diagnosed by the laryngoscope, 297
Anger (M.), treatment of cysts with mucous contents by injections of chloride of zinc, 195
Anodyne amyl colloid in herpes frontalis, 130
Antagonism between morphia and atropia (Dr. Corona), 132
Antihydropin (cockroach) in dropsy, (Bogomolow), 298
Antipyretic action of cresotinic acid, 201
Aqua puncture as a remedy for neuralgia (Dr. Bartholow), 293
Arles (M.), treatment of inversion of the uterus by the elastic ligature, 56
Arsenic in albuminuria (Dr. T. Lauder Brunton), 427
Arteries of the retina in Bright's disease (Dr. Gowers), 50
Arthritis lithica, 259
Ascites, iodine injections in, 292
Aspiration in strangulated hernia (M. d'Outrelepont), 201
Aspirator, necessity of caution in use of the (E. Pingaud), 288
Aspirator in hepatic abscess (Dr. Gerald Bomford), 354
Atropia and morphia, antagonism between, 132
Atropia and morphia, the so-called antagonism of (Professor Binz), 356
Atropia in acute mania, 166
Atropine enemeta in cystitis (Dr. Simple), 190
Auditory nerve vertigo, 448
Austin's pocket inhalers, 202

B.

Balfour (Dr. Geo.) "Clinical Lectures on Diseases of the Heart and Aorta" (Review), 363
Balogh (C.), external application of mercury, 288
Bartholow (Dr.), aqua puncture as a remedy for neuralgia, 293
Battey (Dr. R.), iodized phenol, 375
Beauvis (H.) "Nouveaux Eléments de

Physiologie Humaine,"&c. (Review), 436
Beriberi (Sir J. Fayrer, K.C.S.I., M.D.), 1
Berlin (Dr.), method in treatment of entropion, 446
Bibliography, 60, 203, 303, 383, 461
Bicarbonate of potash as a nerve-sedative, 49
Bile Pigment, tests for (Dr. Walter Smith), 200
Bilot (M.), cauterisation of the pharyngeal mucous membrane in amnesia, 200
Binz (Professor), so-called antagonism of atropia and morphia, 356
Blake (Dr.), ulceration of the tongue in hooping-cough (note on), 202
Blenkarne (M. L'Heureux) herpes frontalis treated locally by anodyne amyl colloid, 130
Blisters in sciatica, 101
Bogomolow (M.), antihydropin in dropsy, 298
Bomford (Dr. Gerald), the aspirator in hepatic abscess, 354
Both (Dr.), tuberculosis of the lungs cured by inducing calcification, 454
Boucheron (Dr.), on the treatment of sympathetic ophthalmia, 53
Bourceret (M.), action of Faradaic currents in cutaneous anæsthesia, 293
Boustead (Dr.), salicylic acid in cholera, 372
Bradbury (Dr.), nature and treatment of pernicious anæmia, 128
Brailes, official report on an outbreak of diphtheria at, 74
"Brain, functions of the," Dr. David Ferrier (Review), 123
Brandy in pneumonia, 266
Braun (Professor Gustav), significance of an unruptured hymen in pregnant women, 188
Breast strapped to diminish suppuration after abscess (Dr. Martin), 368
Bridges (Robert, M. B.), cases of violent chorea, illustrating the administration of chloral hydrate in large doses, 172
Bright's disease, arteries of the retina in, 50
Broadbent (Dr.), treatment of psoriasis, 187
Broadbent (Dr. W. H.), Warburg's tincture, 81
Bromidrosis pedum (Dr. Longworth), 457
Bronchial mucous membrane locally treated by carbolic acid, 188
Brouardel (M.), amount of urea excreted, an aid in the diagnosis and prognosis of diseases of the liver, 199
Brown (Dr. C. W.), gangrene of the lung treated with salicylic acid, 294
Brown (Dr. T. E.), Damocrates' confection and Warburg's tincture, 374
Browne (Edgar A.), "How to use the Ophthalmoscope" (Review), 185
Brunton (Dr. T. Lauder), arsenic in albuminuria, 427
Burrall (Dr.), ready method of administering fluids when the jaws are firmly closed, 198
Buzzard (Dr. Thomas), sciatica, 94

C.

Calabar bean in tetanus, 458
Calabar bean in traumatic tetanus, 52
Calcification in cure of tuberculosis of the lungs, 454
Campbell (Dr. W. M.), hydrobromic acid, 448
Cancer of the breast, acetates in, 379
Carbolic acid and creasote locally applied to the bronchial mucous membrane (Dr. Anderson Finlay), 188
Carbolic acid injections for neuralgia (Dr. Merten), 301
Carbolised jute dressing (R. Köhler), 290
Carbolic acid vapour, its action on dry vaccine, 344
Carbuncle, treatment of (Raimbert), 289
Cassia Lata leaves in treatment of ringworm, 129
Catarrhal jaundice (Dr. Krüll), 368
Catillon (Dr. A.), physiological and therapeutical properties of glycerine, 455
Cauterisation of the pharyngeal mucous membrane in amnesia (M. Bilot), 200
Cautery (actual) in spasms, paralysis, and epilepsy (Dr. Dupuy), 450
Charité Annalen, 440
Chest pain of obscure origin (Dr. J. S. Stocker), 370
Chiene (John, F.R.C.S.E., F.R.S.E.), chloroform, its use and abuse, &c., 25-32
Chiene (John, F.R.S.E.), nerve-stretching in sciatica, 417
Chloral (Dr. Oscar Liebreich), 401
Chloral in chorea, note by Dr. Farquharson, 302
Chloral in rabies, 291
Chloral in traumatic tetanus, 52
Chloral hydrate and croton-chloral hydrate, action of (J. v. Mering), 57
Chloral hydrate outwardly applied for the relief of pain, 194

Nitrate of silver in amaurosis (M. Renoux), 301
Nitrous oxide gas in dental surgery, 290
Nocturnal cramp, 285
Nothnagel (M.), means of arresting epileptic attacks, 300
Nux vomica in beriberi, 8

O.

Obseity of young women cured by milk diet, 451
Ogilvie (Dr. J. C.), phimosis, 269
Ogle (Dr.), acute rheumatism treated with salicylic acid, 285
Oleum nigrum in beriberi, 7
Ollier (M), treatment of coxalgia, 56
Ophthalmia (sympathetic), treatment of (Dr. Boucheron), 53
"Ophthalmic Surgery, Manual of," B. Thompson Lowne (Review), 282
"Ophthalmoscope, how to use it," Edgar A. Browne, (Review), 185
Opium as a laxative (Saltern G. Littlejohn, M.B.), 10
Opium in treatment of rigid os uteri (Dr. McElroy), 130
Otorrhœa treated (Dr. J. Orme Green), 299
Oxygen in rabies, 291

P.

Pain relieved by the outward application of hydrate of chloral (Dr. Kesteven), 194
Paralysis, actual cautery in, 450
Paralysis (diphtheritic), 177, 193, 245
Paralytic affection, volition and manipulations in, 284
Pasteur's "Nutritive Fluid," poisonous action of, when cloudy, from development of bacteria (M. Buchholtz), 54
Pel (P. K), action of salicylate of soda in intermittent fever, 54
Pepsin in medicine, its use and its preparation (Oscar Liebreich, M.D.), 161; in imperfect digestion, 162; wine, 165
Periodic neuralgia. (*See* Neuralgia.)
Peripheric cutaneous nerves in pemphigus (M. Vulpian), 55
Pettenkofer (Dr. Max von), ætiology and prophylaxis of cholera, 135, 204
Pharmacy, the application of salicylate of atropia to, 446
Pharyngeal mucous membrane, cauterised in amnesia, 200
Phimosis, 269; treatment of accidental, 272; operative treatment, 273
Phosphide of zinc, value of, 56
Phthisis syphilitica, 260
Physical exercise for the sick (Dr. Putman), 196
Physiological action of mancona bark, 186
Physiological action of sanguinarina (Dr. R. Meade), 297
Physiological action of sulphate of guanidine. (*See* Sulphate of Guanidine.)
"Physiology of Mind," Dr. H. Maudsley (Review), 123
Pick (Prof.), on eczema marginatum, 35
Pierd'houy (Dr.), treatment of granular lids by acetate of lead, 196
Pingaud (E.), necessity of caution in use of the aspirator, 288
Pitch, its effect on the skin, 318; on the eyes, 471: on the respiratory organs, 474; on the digestive organs, 475; on urine, 476
Pleuritis lithica, 259
Pneumonia (acute) treated by turpentine (Mr. R. E. Power), 47; lithica, 259; simplex, 260; spanæmica, 264
Poore (Dr. G. V.), "Text Book of Electricity in Medicine and Surgery" (Review), 362
Post-partum hæmorrhage, on a new treatment in (Mr. Handsel Griffiths, Ph.D.), 176
Post-partum hæmorrhage, ether spray in, 302
Potash, bicarbonate of, as a nerve-sedative (Mr. Erskine Stuart), 49
Potassium iodide, mode of action of, (Dr. Kämmerer), 296
Power (Mr. R. E.), acute pneumonia treated by turpentine, 47
Power (Mr. W. H.), Official Report on the outbreak of diphtheria, 74
"Practitioner's Handbook of Treatment," &c. Dr. J. Milner Fothergill (Review), 42
Prevost (M.), rabies treated by intravenous injection of chloral, 291
Primrose (evening), as a sedative (Dr. N. S. Davis), 457
Psoriasis of the tongue (M. Devergie), 452
Psoriasis treated (Dr. Broadbent), 187
Public Health Department:—Dr. Squire on the registration of disease, 61; Mr. W. H. Power on an outbreak of diphtheria in Brailes, 74; Dr. Max von Pettenkofer, nine propositions bearing on the ætiology and prophylaxis of cholera, deduced from the official returns of cholera-epidemic in East India and North America, 135, 204; the art of making hospitals

unhealthy—a review of several recent works on the subject, 304; disinfection after small-pox, and experiences of a microzyme pursued by the process, 312; diseases and hygiène of workmen in the manufacture of artificial fuel from pit-coal agglomerated with dry pitch, 316, 395, 471; citizenship in sanitary work: a home example, 462; hygeia militant, 466; sewage disposal, 384

Puerperal fever, local treatment of (Dr. Fritsch), 376

Putman (Dr.), physical exercise for the sick, 196

Q.

Quincke,, (Prof.), nature and treatment of pernicious anæmia, 128

Quinine as an ecbolic (H. P. Roberts), 256

Quinine in treatment of fissures of the nipple (Dr. Le Diberder), 131

R.

Rabies treated by intravenous injections of chloral (M. Prévost), 291; by oxygen (MM. Schmidt and Lebedew), 291

Raimbert (M.), treatment of carbuncle, 289

Ratcliffe (Mr. Netten), report on the Manchester Infirmary, 307

Registration of disease, 61

Reid (Dr. Walter, R.N.), new mehtod of treating external aneurism, 134, 294

Reiss and Stricker, action of salicylic acid, 291

Remedies, on the topical action of, 15

Renoux (M.), nitrate of silver in amaurosis, 301

Rheumatic diathesis, 261

Rheumatism (acute), treated with salicylic acid (Dr. Ogle), 285

Rigid os uteri, treated by opium, 130

Ringworm treated by leaves of *Cassia lata* (Dr. David Foulis), 129

Ringer (Dr. Sydney) and J. S. Bury, acute mania treated with hyoscyamia, daturine-atropia, and ethyl-atropia, 166

Roosa (Dr. St. John), relations of ciliary blepharitis to ametropia, 295

Roberts (H. B.), quinine as an ecbolic, 256

Rosenbach (O.), pathology and treatment of chorea, 195

Russell (Dr. W. J.) and West (Dr.), the quantitative estimation of urea, 33

Rutherford (Dr. W.), "Outlines of Practical Histology" (Review), 436

S.

Salicine, action of (A. D. L. Napier, M.B.), 410

Salicine, observations on, 425

Salicylate of atropia and its application to pharmacy (Dr. Tichborne), 446

Salicylate of soda, therapeutic action of, 53

Salicylate of soda in intermittent fever (P. K. Pel), 54

Salicylate of soda, its physiological action (Dr. Danewsky), 378

Salicylate of soda, observations on, 425

Salicylic acid, action of (Riess and Stricker), 291

Salicylic acid in cholera (Dr. Boustead), 372

Salicylic acid in gangrene of the lung, 294

Salicylic acid in iritis (Dr. Leonard Wheeler), 459

Salicylic acid, observations on, 425

Saline drugs, the use of weak solutions (W. F. Wade, F.R.C.P.), 241

Sanguinarina, physiological action of, 297

Saw, a new (Mr. F. A. Stohlmann), 445

Sawdust dressing, 382

"Sciatica, Lumbago, and Brachialgia, and their Relief and Cure by the Hypodermic Injection of Morphia," (Henry Lawson, M.D.) (Review), 364

Sciatica, chloroform injections in treatment of, 456

Sciatica (Dr. Thomas Buzzard), 94; great sciatic nerve, 95; small sciatic nerve, 96; treatment by blisters and electricity, 101; by constant voltaic current, 102; details of application, 103

Sciatica, mode of treatment by sixty-three subscribers to the *Practitioner*, 107; remedial agents resorted to, 108; local measures employed, 110; diet and regimen, *ib.;* electricity in, 111; surgical measures, 112

Sciatica, nerve-stretching in, 417

Schafer (E. A.), "Course of Practical Histology" (Rewiew), 436.

Schmidt and Lebedew (MM.), oxygen in rabies, 291

Scrofulous lymphatic glands, treatment by a painless electrolytic caustic (Mr. C. H. Golding-Bird), 447

Scully (Dr.), new remedy called digestine, 455
Secretion of sweat (B. Luchsinger), 380
Sewage disposal, 384
Simple (Dr.), atropine enemeta in cystitis, 190
Skerritt (Dr. Markham), croton chloral in neuralgia, 49
Skin, action of water on the, 380
Skin-diseases, diathesis in, 262
Skin-disease, Goa powder in, 367
Small-pox, disinfection after, 312
Smith (J. Lewis), "Treatise on the Diseases of Infancy" (Review), 279
Smith (Eustace, M.D., F.R.C.P.), "Clinical Studies of Disease in Children, Diseases of the Lungs, Acute Tuberculosis" (Review), 279
Smith (Dr. Walter), new tests for bile pigment, 200
Spasms, actual cautery in, 450
Spender (Dr. Kent), remedies for chronic diarrhœa, 48
Spinal irritation, curative effects of counter-irritation of the back in, 113
Sponges, elastic compression by, 378
Squire (Dr. W.), registration of disease, 61
Squire (Dr. B.), Goa powder in skin-disease, 367
Steiner (Dr. John), "Compendium of Children's Diseases" (Review), 183
Stocker (Dr. J. S.), chest pain of obscure origin, 370
Stohlmann (Mr. F. A.), a new saw, 445
Strangulated hernia, aspiration in, 201
Stuart (Mr. Erskine), bicarbonate of potash as a nerve-sedative, 49
Stuart (John A., L.R.C.S.), observations on salicine, salicylate of soda, and salicylic acid, 425
Sciatica, oil of turpentine in, 367
Sulphate of atropine, local action of (A. Zeller), 55
Sulphate of guanidine, physiological action of, on spinal cord, motor nerves, striated muscular fibres, smooth muscular fibres of the pupil, the heart (MM. Putzeys and Swaen), 197
Sulphur dioxide, its action on dry vaccine, 344
Sulphur and sulphurous acid (Dr. Walter Fergus), 341
Sunstroke (Dr. Horatio Wood), 379
Sweat, secretion of, 380
Syphilis treated hypodermically (Professor Neumann), 187
Syphilitic warts, 284
Syphilitic diathesis, 260
Synovotis malariosa, 261

T.

Tape-worm expelled by turpentine (Dr. Arthur Leared), 170
Tarnier (M.), obesity of young women cured by milk diet, 451
Tenholt (M.), treatment of diphtheritis, 298
Tests for bile pigment, 200
Tetanus treated by Calabar bean (Dr. Grant), 458
Tibbets (Dr.), galvanic battery in medicine, 191
Tichborne (Dr.), salicylate of atropia and its application to pharmacy, 446
Therapeutic action of salicylate of soda (Justi), 53
Thin (Dr. George), some remarks on the eczema marginatum of Hebra, 34
Thomas (Dr.), abdominal pregnancy treated by gastrotomy, 190
Thrombosis penis (R. C. Lucas), 22
Tompsett (James, M.R.C.S. and Q.S.A.), use of Warburg's tincture, 321
Tongue, psoriasis of the, 452
Topical action of remedies (J. R. Gasquet, M.B.), 15
Tottenham Sanitary Association, 462
Toxic action of glycerine (M. Dujardin-Beaumetz), 296
Traumatic tetanus, forcible extension of nerves in (Dr. Paul Vogt), 51
Traumatic tetanus treated by nerve-stretching, Calabar bean, and chloral (Dr. Drake), 52
Treak farook in beriberi, 7
"Treatise on the Diseases of Infancy and Childhood" J. Lewis Smith, M.D., (Review), 279
Tuberculosis of the lungs cured by inducing calcification (Dr. Both), 454
Turpentine, disadvantages of the oil of, as a vermicide (Dr. F. de Havilland Hall), 337
Turpentine in acute pneumonia, 47
Turpentine, oil of, in sciatica (Dr. Jamieson), 367
Typhoid fever, treatment of (Dr. Edebohls), 286

U.

Ulceration of the tongue in hooping-cough, note by Dr. Blake, 202
Ulceration of the tongue as a symptom in hooping-cough, 58
Urea, amount of excreted, an aid in the diagnosis and prognosis of diseases of the liver (M. Brouardel), 199

Urea, the quantitative estimation of (Dr. W. J. Russell and Dr. West), 33
Urinary tests in a portable case, 460
Uterine diseases, alcoholism in relation to, 445
Uterus, inversion of, by the elastic ligature (M. Arles), 56

V.

VACCINE (dry), action of chlorine, sulphur dioxide, and carbolic acid vapour on, 344
Vermicide, disadvantages of oil of turpentine as a, 337
Viburnum prunifolium in the treatment of the diseases of women (Dr. Jenks), 190
Vigier (M. Pierre), therapeutic value of zinc phosphide, 295
Vogt (Dr. Paul), forcible extension of nerves in traumatic tetanus, 51
Volition and manipulation in the treatment of paralytic affection (Mr. Maclean), 284
Voltaic current in sciatica, 102
Vulpian (M.), alterations in the peripheric cutaneous nerves in pemphigus, 55

W.

WADE (W. F., F.R.C.P.), use of weak solutions of saline drugs, 241
Walker (Dr. Jerome), digestion and dilution of cow's milk in feeding of children, 452
Warburg's tincture (Dr. W. H. Broadbent), 81
Warburg's tincture, use of (James Tompsett, M.R.C.S. and Q.S.A.), 321
Warburg's tincture and Damocrati's confection, 374
Warts, syphilitic, 284
Wanklyn (Mr.) and Mr. W. J. Cooper, alcohol as food, 47
Water, its action on healthy and diseased skins (Professor Hebra), 380
Wheeler (Dr. Leonard), salicylic acid in iritis, 459
White (Dr. Leavens), treatment of erysipelas by liquor ferri perchloridi fortior, 48
Wood (Dr. Horatio), sunstroke, 379
Wright (Mr. Thomas), cure of aneurism by complete temporary pressure, 192

Z.

ZAWERTHAL (Dr.), diagnosis of aneurisms of the aorta by the laryngoscope, 297
Zeller (A.), local action of sulphate of atropine, 55
Ziemssen (Dr. H. von), "Cyclopædia of Practical Medicine" (Review), 359
Zinc in treatment of cysts, 195
Zinc phosphide, therapeutic value of (M. Pierre Vigier), 295
Zinc phosphide, value of, 56

LONDON: R. CLAY, SONS, AND TAYLOR, PRINTERS.

Chlorine, its action on dry vaccine, 344

Chloroform (John Chiene, F.R.C.S.E., F.R.S.E.), 25; its physiological action, *ib.;* proper method of administration, 26; dangers which accompany its use—tongue falling back—glottis closing—fainting, 29; vomiting, 30; treatment of the same, 30-32; dangers which accompany its abuse and treatment, 32

Chloroform injections in the treatment of inveterate sciatica, 456

Cholera epidemic in East India and North America, 135, 204

Cholera, salicylic acid in, 372

Cholera, Warburg's tincture in, 81

Chorea, chloral in, 302

Chorea, pathology and treatment (O. Rossenbach), 195

Chorea, treatment of (M. Hubert Guérin), 132

Chorea, violent cases of, illustrating the administration of chloral hydrate in large doses (Robert Bridges, M.D.), 172

Christopher (J. Crouch, F.R.C.S.), a new preparation of iodine, 339

Churton (T., M.B.), on the desirability of formally naming any existing diathesis in cases of acute disease, 257

Ciliary blepharitis (or ophthalmia tarsi) and ametropia, their relation (Dr. St. John Roosa), 295

Citizenship in sanitary work at Tottenham, 462

"Clinical Lectures on Diseases of the Heart and Aorta," by Geo. W. Balfour, M.D., F.R.C.P. (Review), 363

"Clinical Studies of Disease in Children, Diseases of the Lungs, Acute Tuberculosis," Dr. Eustace Smith (Review), 279

Cocona (Dr.), antagonism between atropia and morphia, 132

Collie (Dr.), disinfection after smallpox, 312

"Compendium of Children's Diseases," Dr. John Steiner (Review), 183

Cook (Dr. G. R.), treatment of diphtheria, 372

Coomes (Dr. Martin F.), easy method of cleansing the middle ear of infants, 133

Counter irritation of the back in cases of nervous debility and spinal irritation, 113

Cows' milk in feeding of children, 452

Coxalgia, treatment of (M. Ollier), 56

Cramp, treatment of nocturnal (Dr. Murray), 285

Cresotinic acid, antipyretic action of, 201

Croton-chloral in neuralgia (Dr. Markham Skerritt), 49

Croton-chloral hydrate, action of, 57

Croup, treatment of (J. J. Higgins, A.M., M.D.), 323

Curie (M. Eugéne), acetic acid and acetates in treatment of cancer of the breast, 379

Curnow (Dr. John), eucalyptus globulus as a cure for ague, 366

Cutaneous anæsthesia, Faradaic currents in, 293

Cutaneous itching, 371

"Cyclopædia of Practical Medicine," Dr. H. von Ziemssen (Review), 359

Cysts with mucous contents treated by injections of chloride of zinc (M. Auger), 195

D.

Damocratis confection and Warburg's tincture (Dr. T. E. Brown), 374

Dandriff, remedy for, 379

Danewsky (Dr.), physiological action of salicylate of soda, 378

Daturine in acute mania, 166

Davis (Dr. N. S.), evening primrose as a sedative, 457

Delens (Dr. E.), intra-buccal elastic ligature for the removal of lingual tumours, 298

Delirium lithicum, 264; malariosum, 264

Dental surgery, selection of anæsthetics for (M. Moreau-Marmont), 290

D'Estrées (Dr. Debout), on the causes of gravel, 412

Devergie (M.), psoriasis of the tongue, 452

Diagnosis of aneurisms of the aorta by the laryngoscope (Dr. Zamerthal), 297

Diathesis: in cases of acute disease—on the desirability of formally naming, 257; influence of admitted, *ib.;* diatheses liable to be overlooked, 258; the syphilitic, 260; the rheumatic, 261; the gouty, 262; in skin diseases, *ib.;* compound, 263; names suggested for various, 267

Diarrhœa (chronic), remedies for (Dr. Kent Spender), 48

Diberder (Dr. Le), quinine in treatment of fissures of the nipple, 131

Diberder (Dr. Le), ergot as a preventive of after-pains, 187

Dictionary of Medical Literature, preparation of, by Dr. Billings, 275

Digestine for vomiting in pregnancy, (Dr. Scully) 455

Digestion and dilution of cows' milk in

feeding of children (Dr. Jerome Walker), 452
Diphtheria, official report on the outbreak of, in Brailes (W. W. H. Power), 74; treatment of (Dr. G. R. Cook), 372
Diphtheritic paralysis (Dr. Thomas Stretch Dowse), 177, 193, 245
Diphtheritis treated by salicylic acid and lime water (Tenholt), 298
Disease, on the registration of, 61
"Diseases of the Peripheral Cerebro-Spinal Nerves," Wilhelm Hermick Erb, vol. xi. of Ziemssen's Cyclopædia of Practical Medicine, translated by Henry Power (Review), 360
Diseases of women treated by viburnum prunifolium, 190
Diseases and hygiène of workmen in the manufacture of artificial fuel from pit-coal agglomerated with dry pitch (Dr. A. Manouvriez), 316
Disinfection after small-pox (Dr. Collie), 312
Dowse (Dr. Thomas Stretch), diphtheritic paralysis, 177, 193, 245
Doyle (Dr.), alcoholism in relation to uterine diseases, 445
Dujardin-Beaumetz (M.), toxic action of glycerine, 296
Dupuy (Dr.), actual cautery in spasms, paralysis, and epilepsy, 450
Drake (Dr.), traumatic tetanus treated by nerve-stretching, calabar bean, and chloral, 52
Dropsy, a case of (Dr. J. Milner Fothergill), 421

E.

Ear (middle) of infants, how to cleanse, 133
Eczema and diabetes mellitus, their connection (Dr. B. Hicks), 370
Eczema marginatum of Hebra (Dr. George Thin), 34
Edebohls (Dr.), treatment of typhoid fever, 286
Elastic compression by sponges (Prof. C. Heine), 378
Elastic ligature in treatment of inversion of the uterus, 56
"Electricity in Medicine and Surgery," G. V. Poore, M.D., M.R.C.P. (Review), 362
Electrolytic caustic in treatment of scrofulous lymphatic glands, 447
Entropion, treatment of, by Dr. Berlin's method, 446
Epilepsy, actual cautery in, 450
Epileptic attacks, means of arresting them (M. Nothnagel), 300
Ergot as a preventive of after-pains (Dr. Le Diberder), 187
Erysipelas treated by liquor ferri perchloridi fortior as a local application, 48
Erythroxylon cuca in treatment of febrile diseases (Dr. McBean), 286
Esmarch's bandage in external aneurism, 134
Ether-spray in the treatment of post-partum hæmorrhage, 176, 302
Eucalyptus globulus as a cure for ague (Dr. John Curnow), 366
Ethyl-atropia in acute mania, 166

F.

Faradaic currents in cutaneous anæsthesia (M. Bourceret), 293
Fergus (Dr. Walter), sulphur and sulphurous acid, 341
Ferrier (Dr. D., F.R.S.), "Functions of the Brain" (Review), 123
Fever, Warburg's tincture in, 81; intermittent, salicylate of soda in, 54; typhoid, 286
Fistula in cheek following necrosis of lower jaw, 370
Fluids administered when the jaws are firmly set (Dr. Burrall), 198
Fleming (Mr. George), treatment of hydrophobia, 193
Ford (Dr.), iodine injections in ascites, 292
Foster (Dr. M.), "Text Book of Physiology" (Review), 436
Foster (Dr. M.) and J. N. Langley, "Course of Elementary Practical Physiology" (Review), 436
Fothergill (Dr. J. Milner), "Practitioner's Handbook of Treatment, or the Principles of Therapeutics" (Review), 42; a case of dropsy, 421
Foulis (Dr. David), treatment of ringworm by leaves of cassia lata, 129
Francis (Surgeon-General), periodic neuralgia not dependent on structural lesion, 449
Fritsch (Dr.), local treatment of puerperal fever, 376
"Functions of the Brain," Dr. D. Ferrier, F.R.S. (Review), 123
Fayrer (Sir J., K.C.S.I., M.D.), Beriberi, 1; definition--geographical distribution, *ib.*; etymology—etiology, 2; pathology, 4; morbid anatomy, 5; symptomatology, 6; prevention and treatment, 7

G.

Galvanic battery in medicine (Dr. Tibbets), 191

Gamgee (Dr. Arthur, F.R.S.), curative effects of counter-irritation of the back in cases of general nervous debility and spinal irritation, 113
Gangrene of the lung treated with salicylic acid (Dr. C. W. Brown), 294
Gasquet (J. R., M.B), topical action of remedies, 15
Gastrotomy in treatment of abdominal pregnancy, 190
Gelseminum for dilatation of the cervix uteri, 131
Glycerine, its physiological and therapeutical properties (Dr. A. Catillon), 455
Glynn (Dr. T. R.), progressive pernicious anæmia successfully treated by immediate transfusion, 369
Goa powder in skin disease (Dr. B. Squire), 367
Goa powder, its first introduction in Shanghai, 59
Golding-Bird (Mr. C. H.), electrolytic caustic in treatment of scrofulous lymphatic glands, 447
Gouty diathesis, 262
Gowers (Dr.), arteries of the retina in Bright's disease, 50; treatment of auditory nerve vertigo, 448
Grant (Dr.), Calabar bean in tetanus, 458
Granular lids treated by acetate of lead (Dr. Pierd'houy) 196
Gravel, on the causes of (Dr. Debout d'Estiées), 412
Green (Dr. J. Orme), treatment of otorrhœa, 299
Griffiths (Dr. W. Handsel), ether-spray in treatment of post-partum hæmorrhage, 176
Guanidine (*see* sulphate of)
Guérin (M. Hubert), treatment of chorea, 132

H.

Hæmoptysis, its relation to barometric pressure (Dr. Nelson), 198
Hall (Dr. F. de Havilland), disadvantage of oil of turpentine as a vermicide, 337
Hay's aërated waters, 202
Headache, remedy for (Dr. Lockeridge), 455
Heath (C., F.R.C.S.), course of operative surgery, with plates drawn from nature, 443
Hebra, remarks on the eczema marginatum of, 34
Hebra (Prof.), action of water on healthy and diseased skins, 380
Heine (Prof. C.), elastic compression by sponges, 378; kepatic abscess, the respirator in, 354
Hepatic Abscess, the aspirator in, 354
Hepatitis syphilitica, 260
Herpes frontalis treated locally by anodyne amyl colloid (Mr. L'Heureux Blenkarne), 130
Hervez (M.), treatment of migraine, 197
Hicks (Dr. Braxton), connection between eczema and diabetes mellitus, 370
Higgins (J. J., A.M., M.D.), treatment of croup, 323
Hooping-cough, cause of (M. Gueneau de Mussy), 292
Hospitals, the art of making them unhealthy, 304
Hurd (Dr. E. P.), treatment of neuralgia, 373
Hydrobromic acid (Dr. W. M. Campbell), 448
Hydrophobia, treatment of (Mr. George Fleming), 193
Hygeia militant, 466.
Hymen (unruptured) significance of in pregnant women (Professor Gustav Braun), 188
Hyoscyamia in acute mania, 166
Hypodermic treatment of syphilis, 187

I.

Imlay (Dr. Anderson), local application of carbolic acid and creasote to the bronchial mucous membrane, 188
Indian cholera epidemic, 135, 204
Inhalers, Austin's pocket, 202
Intra-buccal elastic ligature for the removal of lingual tumours (Dr. E. Delens), 298
Iodine, a new preparation of (J. Crouch Christopher, F.R.C.S.), 339
Iodine injections in ascites (Dr. Ford), 292
Iodized phenol (Dr. R. Battey), 375
Iritis, salicylic acid in, 459
Itching (cutaneous), 371

J.

Jamieson (Dr.) oil of turpentine in sciatica, 367
Johns Hopkins' Hospital Reports, reference to, 306
Justi (M.) therapeutic action of salicylate of soda, 53
Jute, carbolised, 290

K.

Kammerer (Dr.), mode of action of potassium iodide, 296

"Kirke's Handbook of Physiology," Ed. by W. M. Baker, F.R.C.S. (Review), 436

Kesteven (Dr.), relief of pain by the outward application of hydrate of chloral, 194

Köhler (R.), carbolised jute dressing, 290

Krüll (Dr.), catarrhal jaundice, 368

Kuss (Prof.), "A Course of Lectures on Physiology" (Review), 436

L.

Laryngoscope in the diagnosis of aneurisms of the aorta, 297

Lawson (Dr.), "Sciatica, Lumbago, and Brachialgia," &c. (Review), 364

Laxative, opium as a, 10

Leared (Dr. Arthur), tape-worm expelled by turpentine, 170

Liebreich (Dr. Oscar), on chloral, 401

Liebreich (Oscar, M.D.), uses of pepsin in medicine, and its preparation, 161

Lime juice, 202

Liquor ferri perchloridi fortior as a local application in erysipelas (Dr. Leavens White), 48

Littlejohn (Saltern G., M.B.), opium as a laxative, 10

Lockeridge (Dr.), remedy for headache, 455

Longworth (Dr.), bromidrosis pedum, 457

Lowne (B. Thompson), "Manual of Ophthalmic Surgery," (Review), 282

Lucas (R. C., B.S., F.R.C.S.), thrombosis penis, 22

Luchsinger (B.), secretion of sweat, 380

M.

McBean (Dr.), erythroxylon cuca in treatment of febrile diseases, 286

McElroy, opium in treatment of rigid os uteri, 130

McLean (Prof.), composition and preparation of Warburg's tincture, 81

Maclean (Mr.), use of volition and manipulations in the treatment of paralytic affections, 284

Manchester Royal Infirmary, Mr. Netten Radcliffe's Report on, 307

Mancona bark, its physiological action, (MM. N. Gallois and E. Hardy), 186

Mania, acute, treated with large doses of hyoscyamia, daturine, atropia, and ethyl-atropia (Dr. Sydney Ringer and J. S. Bury), 165.

Maudsley (Dr. H.) "Physiology of Mind," (Review), 123

Maunder (Mr.), treatment of syphilitic warts, 284

Martin (Dr.), strapping the breast to diminish suppuration after abscess, 368

Meade (Dr. R.), physiological action of sanguinarina, 297

Medical Literature, Dictionary of, 275

"Medicinal Plants" (Robert Bentley, F.L.S.) and Henry Trenien, M.B., F.L.S.), (Review), 281

Medicine, use of pepsin in, 161; of the galvanic battery, 191

Mercury externally applied (C. Balogh), 288

Meriug (J. v.), action of chloral hydrate and croton-chloral hydrate, 57

Merten (Dr.), carbolic acid injections for neuralgia, 301

Microzyme, experiences of a, pursued by disinfection, 315

Middle ear of infants, method of cleansing (Dr. Martin F. Coomes), 133

Migraine, treatment of (M. Hervez), 197

Milk diet in obesity, 451

"Mind, Physiology of the," 123

Moreau-Marmont (M.), selection of anæsthetics for dental surgery, 290

Morphia and atropia, antagonism between, 132

Murray (Dr.), treatment of nocturnal cramp, 285

Mussy (M. Gueneau de), cause of hooping-cough, 292

N.

Napier (A. D. L., M.B.), action of salicine, 410

Nerve - stretching in sciatica (John Chiene, F.R.S.E.), 417

Nerve-stretching in traumatic tetanus, 51, 52

Nervous debility, curative effects of counter-irritation of the back in, 113

Nelson (Dr.), hæmoptysis, its relation to barometric pressure, 198

Neuralgia, aqua puncture in, (Dr. Bartholow), 293

Neuralgia (periodic), not dependent on structural lesion, 449

Neuralgia treated by croton chloral, 49

Neuralgia, treatment of (Dr. E. P. Hurd), 373

Newmann (Prof.), hypodermic treatment of syphilis, 187

R
31
P7
v.18

The Practitioner

Biological
& Medical
Serials

PLEASE DO NOT REMOVE
CARDS OR SLIPS FROM THIS POCKET

UNIVERSITY OF TORONTO LIBRARY